JPRS: 5262

8 August 1960

SELECTED ECONOMIC TRANSLATIONS ON EASTERN EUROPE

(201st in the series)

Photocopies of this report may be purchased from:
PHOTODUPLICATION SERVICE
LIBRARY OF CONGRESS
WASHINGTON 25, D.C.

U.S. JOINT PUBLICATIONS RESEARCH SERVICE
205 EAST 42nd STREET, SUITE 300
NEW YORK 17, N. Y.

JPRS: 5262

CSO: 2000-N/201

SELECTED ECONOMIC TRANSLATIONS ON EASTERN EUROPE

INTRODUCTION

This is a serial publication containing selected translations on all categories of economic subjects and on geography. This report contains translations on subjects listed in the table of contents below. The translations are arranged alphabetically by country.

TABLE OF CONTENTS

EAST GERMANY

Measures for Solving the Transportation Tasks of the Seven-Year Plan

[This is a translation of an unsigned article in a special supplement to the 24 May 1960 issue of Fahrt Frei, Vol 12, No 2, 24 May 1960, East Berlin, pages 1-16; CSO: 4459-N]

Propositions of the Economic Commission of the Politburo of the Central Committee of the Socialist Unity Party of Germany and the Ministry of Transportation for the Preparation of the 1960 Transportation Conference

The Fifth Party Congress of the Socialist Unity Party of Germany adopted the great program of struggle for peace, for the victory of socialism, and for the national rebirth of Germany as a peaceful democratic state. Together with the workers, farmers, and members of the intelligentsia, the transport workers of the GDR are doing outstanding work toward the fulfillment of this plan and are ready to meet the transportation needs of the economy and of the population.

The Seven-Year Plan of the GDR and the People's Plan for Germany (Deutschlandplan des Volkes) are the decisive documents that determine the entire political, economic, and cultural work of all working people.

According to the tasks of the Seven-Year Plan, the plan for the peace, prosperity, and happiness of the people, which imposes on the transportation industry the task of increasing the volume of freight transportation by 140 percent by 1965, the workers in the enterprises and office of the transportation industry are contributing with much enthusiasm to the victory of socialism in the German Democratic Republic.

Under the leadership of the Party organizations, they are struggling to fulfill the tasks of the Seven-Year Plan in a minimum of time, to improve working methods and increase safety, order, discipline, quality, and profitableness in the entire transportation industry.

The workers of the transportation industry are conscious of the fact that they have to fulfill a politically and economically significant obligation toward the cooperative farmers and the cooperative villages. According to the directives of the Seventh and Eighth Plenary Sessions of the Central Committee of the SED [Socialist Unity Party of Germany], all enterprises and offices of the transportation industry are intensifying their political, technical, and economic help and assistance to agriculture and contributing to the development of flourishing socialist villages with the highest agricultural market production in the GDR in a minimum of time.

At the head of this struggle there are 11,100 socialist worker brigades and socialist working and research institutions, in which there are already 200,000 transport workers struggling to fulfill the slogan: "Work, learn, and live socialistically."

In the transportation industry too, the key to all success lies in socialist collective work. The assistance, strengthening, and development of socialist brigades and collectives is therefore one of the most important tasks for all Party and trade-union leaders in the shops and offices. The point is that everybody must realize that no leader can any longer accomplish his tasks without establishing a close contact with the socialist collectives and without learning from them.

The Party organizations and the trade unions in the transportation industry have therefore the duty to regularly evaluate the state of socialist collective work, to carefully study and interpret the experience and proposals of the socialist brigades and collectives and to direct their initiative toward the most important centers of work.

The political section (Politabteilung) of the East German Railroads (Deutsche Reichsbahn) and of the merchant marine of the GDR, as well as the Party organizations in the shops, offices, and administration of the transportation industry bear a great responsibility for mobilizing all workers for high performances and continuous improvement of the political and ideological education on the basis of the decisions of the Central Committee.

It is the responsible task of the political and Party organizations to enable the SED members and candidates to do exemplary work, especially in the promotion and enforcement

of all things new in the transportation industry, and to consistently represent the Party policy wherever it may be. All members of the Party are bound to do exemplary work in the socialist worker brigades and in the socialist work and research institutions.

Every member and candidate of the Socialist Unity Party of Germany must explain to the transportation workers the profound relationship between the fulfillment of the tasks of the Seven-Year Plan and the victory of socialism in the GDR, the struggle to ensure peace and the national rebirth of Germany on the basis of a confederation.

The economic accomplishments achieved are a measure of the quality of the political leadership and the maturity of the consciousness of the transport workers. The economic plan must therefore be the working basis for all Party and trade union organizations.

It results from this that the political and Party organizations must combine their struggle for the fulfillment of the Seven-Year Plan with firm political, ideological and organizational activity toward improving the methods of management and the Marxist-Leninist educational work.

The transport workers have already proved a thousand times their loyalty to the SED and to the government of our workers' and peasants' state by overcoming the destructions of the Fascist war and through the struggle for the development of a modern, efficient socialist transportation industry.

Thus, the railroad workers achieved a 74-percent higher dgree of utilization of the railroad network, as compared to the achievements of the prewar period. The auto-transport workers increased their performance in the transportation of goods by 294 percent since the creations of the GDR.

The workers' and peasants' state have created a modern socialist merchant marine and civil air transport. Both have gained a high international reputation through their achievements.

The railroad workers, truck drivers, seamen, road and hydraulic workers as well as the workers in local transportation will strive with all their might, with their hearts and minds, for the fulfillment of the tasks set by the

Transportation Conference, so that the superiority of our socialist transportation industry over that of the Western zone may become more and more visible in every field.

I. The Superiority of the Socialist Transportation Industry

Railroads, sea navigation, civil air transport, urban transport in the GDR, as well as the majority of the motor-vehicle traffic and inland navigation are the property of the people.

The development of a unified socialist transportation system is determined by the fundamental economic law of socialism. The possibility and necessity of a planned development of the transport industry results from the collective ownership of the means of transport; the tasks and aims of this industry are exclusively determined by the increasing needs of the national economy and of all the working people.

According to the functioning of the fundamental economic law of socialism, one of the most important tasks is to ensure the planned (proportional) development of the socialist transportation industry within the system of the entire national economy at every stage of the socialist construction.

Every change or setting of new goals in the economic development of the GDR has a direct effect on the transportation industry. This concerns the volume and the quality of transportation, as well as the development of transport facilities, installations, and equipment. On the other hand, the transportation industry exerts a direct influence on the development of the national economy. The safer, faster, and more punctual the transportation, the less friction and loss there is in the entire process of production and circulation of the national economy.

On the basis of socialist ownership of the productive facilities in the GDR, it is possible, for the first time in Germany, to achieve long-range planning of the development of the transportation industry within the scope of the entire national economy; this is being done at present with the elaboration of a long-range plan up to 1980.

The superiority of the socialist transportation industry is furthermore shown in the planned establishment of all transportation relations in the national economy and in the rational division of labor among the transport media, as well as in suitable cooperative relations between the transport media and the other branches of the economy.

New socialist relations of friendly aid and collaboration between transport workers are developing. All command posts are occupied by executives loyal to the Party and the workers' and peasants' state.

The four-brigade system has been introduced in the operative service of the railroads. This has created important conditions for the development of socialist collective work among the railroad workers in the shop and traffic services, who are now working in permanent brigades according to precisely established plans; it has also enforced the unified power of command of the Ministry of Transportation down to the [individual] services and extended the possibility of active participation of the railroad workers in the management of their service. The four-brigade system at the same time ensures a 45-hour week and grants more leisure for the personal needs of the railroad workers.

Woman and youths also have all possibilities of development in the transportation industry of the GDR. Educational institutions for the transportation industry have been created in the GDR that are exemplary for all of Germany, such as the Advanced School for Transportation (Hochschule fuer Verkehrswesen) and the railroad engineering schools (Ingenieurschulen fuer Eisenbahnwesen), as the first schools of this kind in Germany.

The solicitude of our state goes to the continuous improvement of the working and living conditions of the workers. Social and cultural institutions, such as factory clinics, sanatoriums, vacation and convalescent homes, clubs, and factory training centers, have been created and are far superior to such institutions in transport enterprises of the Western zone.

The Party and state have always paid great attention to building up an efficient transportation industry and have given extensive help and assistance to the railroad workers, truck drivers, and seamen in the fulfillment of their tasks. The railroad regulations and a number of wage-increasing measures are particularly notable in this respect.

In the workers' and peasants' state, the fear for one's existence or of lay-off because of rationalization or technical progress belongs to the past.

Tarrifs are stable in the GDR and are among the lowest in Europe for commuting workers.

The transportation industry of capitalist countries is an instrument of the ruling exploiting class and serves the execution of its policy of oppression of the workers and the hunger of the monopolies for maximum profits. It clearly expresses the contradictions of the capitalist society.

The West German Railroad (Bundesbahn) of Bonn, and even the entire transportation industry of the Western zone, is a notable example in this respect. Fascistic elements in the managing circles of the transportation industry of the Western zone, such as Transportation Minister Seebohm, together with representatives of monopolitic capital, such as Abs, Oefterding, Wellhausen, etc., are again conducting a transportation policy that is directed against the interests of the people.

The effects of unlimited competition and of forced atomic armament in West Germany have resulted so far in the closing of 20 repair shops, of over 1,000 goods-dispatch points, and other transportation installations, as well as the closing down of hundreds of kilometers of railroads, without consideration for the transportation needs of the population.

The result of this hunger for profits, of the rationalization and preparation for war, is for hundreds of thousands of West German railroad workers intensified work pressure, early disability, and decrease of social benefits, as well as an increasingly more uncertain future for them and their families.

Repeated freight tariff increases, continuously increasing passenger rates in local transportation media, and an increase in the so-called social rates--for example, workers' weekly tickets, students' season tickets, etc.--are the results of this policy for the workers, especially those in the low-income groups.

Huge sums are extracted every year from the work of the railroad workers of the West German Railroads for financing atomic armament. To this may be added the millions that are spent for the relief of former active militarists and Fascists

who are found again, in increasing numbers, at command posts of the transportation industry.

The direct linkage between the West German Railroad and the war preparations of NATO are documented by a number of special contracts and through personal representations at the NATO staff. The West German Railroad is bound by the treaty relative to the stationing of troops (Truppenvertrag) to meet all the demands of NATO. This includes military transportation free of charge and the creation of a permanent transportation reserve in material and manpower in case of war.

This is why the West German Railroad has debts of over five billion marks. Influential circles of monopolistic capital have recently become increasingly more open in their demands for an even more radical rationalization of the railroad and its conversion to private ownership; this appears, in particular, in the ill-famed Brand Report.

Only the adoption and execution of the proposal of the USSR for a peace treaty and of the People's Plan for Germany, submitted by the SED, show the path toward the national rebirth of Germany as a peaceful and democratic state based on a confederation.

The People's Plan for Germany emphasizes the responsibility of the working class in both states in securing peace and solving the national problem in Germany.

This shows, at the same time, how to stop the disastrous development at the West German Railroad, how to break the influence of the militarists and monopolists, how to normalize the economic conditions and change the situation of the West German railroad workers.

II. For a Higher Quality of Management

The transportatinn industry is an important instrument of the workers' and peasants' state; it combines all parts of the national economy into a single unit and is being managed according to the principle of democratic centralism. The officials and collaborators of the ministry and of all other managing organizations of the transportation industry

therefore bear a great responsibility in executing the decisions of the Party and government.

It is precisely in the transportation industry that the Leninist principle of democratic centralism must find its expression in a strict, planned management from top to bottom, a clear definition of the competence and personal responsibility, as well as active participation of the workers in management. This requires a maximum of partiality, professional ability, conscious discipline, sense of responsibility, and willingness on the part of every worker and in particular of every manager.

New principles of management and organization have been applied in the last few years; they have contributed to the participation of the workers in management and to the use of available reserves for increasing performances. Such measures as the introduction of a dispatch service and the four-brigade system as well as economic accounting methods in railroads, regular contests, production advisory meetings, and economic conferences in the entire transportation industry and the establishment of close relations between the managing officials and the workers in the shops and offices made it possible to successfully meet the yearly increasing transportation requirements of the national economy.

The great tasks of the Seven-Year Plan and the state of socialist collective work that has been achieved in the shops and offices of the transportation industry now make it necessary to considerably raise the level of managerial activity.

At present the socialist collective work is not as yet being managed with sufficient firmness of purpose. The Ministry of Transportation and the subordinate organizations do not as yet carry out a sufficiently far-seeing, scientifically based managerial activity focused on the principal points. The execution of decisions that have been made and of instructions and orders that have been given is still insufficiently controlled.

A socialist manager must study the decisions of the Party and government and creatively put them into practice in his sphere of competence. He must always decide upon and solve any technical problem in the interest of the workers' and peasants' state. The education of the people suborinate to him toward socialist thought and action must be his principal duty.

Every managing official has the duty of rapidly clarifying and deciding on any problem that requires an unqualified solution.

Starting from the Ministry of Transportation and down to the local offices and shops, the managerial activity must be changed so as to ensure the active participation of the workers in solving the principal problems in all branches of the transportation industry.

Decisive measures and decisions that have an effect on the performance and working conditions of the people have to be prepared more thoroughly and more scientifically and have to be discussed with the workers.

The socialist style of workin g must lead to an increased responsibility of the managers of all installations, services, and shops of the transportation industry. In order to improve and simplify working methods and to enforce the principle of strict thrift, any tendency toward an amplification of the administrative apparatus must be strongly opposed in all jurisdictions, administrations, offices, shops, and bureaus.

In order to overcomethe splitting up of competences and to better coordinate the work and ensure a unified power of command in the shops and traffic services of the East German Railroad, complex services have to be set up where conditions for this are given.

The rapid rate of development of road transportation requires that the bezirk road transportation administration (Bezirksdirektionen des Kraftverkehrs), as agents of the bezirk councils, concentrate on the improvement of the managerial activity of the state-owned traffic and repair enterprises and strengthn their sense of responsibility.

The firmness of purpose in this activity of increasing the sense of responsibility of the local agents of the transportation industry must rapidly and efficiently lead to a successful struggle against any phenomena of bureaucracy and heartlessness.

The increase in activity of the transportation workers and the full development of their creative abilities and resourcefulness must be concentrated, with firmness of purpose, on the creation of examples that have fundamental importance in increasing performance. After the experiences gained have been studied, the appropriate measures for generalizing the

good examples have to be taken together with the workers.

The organization and execution of exchanges of experience and comparisons of performances are to be developed more rapidly into an integral part of the managerial activity of all agents of the transportation industry.

The change in managerial activity depends, to a decisive extent, on the practice of a socialist policy concerning supervisory personnel. The selection, training, and promotion of supervisory personnel is an essential principle of management that makes it possible to solve more rapidly the higher problems.

The socialist brigades and working institutions are na important source of future supervisory personnel. They provide able transportation organizers with a good political and technical knowledge. The managerial control of all tasks requires that all decisions, instructions, and orders state who is personally responsible for their execution.

The managers have to see to it that the officers are trained in the process of work and that they will strive, under all conditions, for the execution of the decisions of Party and government.

III. The Principal Tasks of the Transportation Media in Solving the Main Economic Problem and in Fulfilling the Seven-Year Plan

The 188-percent increase in industrial production, provided in the Seven-Year Plan, the twofold increase in constructions and the extension of foreign trade, as well as the increased market production thanks to the socialist transformation of agriculture, require a total increase of 140 percent in freight transportation by 1965.

The volume of freight will freight will increase by 124 percent for railroads, 156 percent for road transportation, and 153 percent for river navigation. The volume of freight carried by marine navigation will increase by 365 percent. Civil air transport will multiply its performance many times.

The close fraternal collaboration and cooperation between the socialist countries creates increasing demands for the

transportation industry and is very useful for the development of this industry. International collaboration in all branches of transportation, especially within the socialist camp, is therefore gaining in importance.

In the interests of a greater usefulness to society, transportation requires on the part of all participants the economically most rational organization of the transportation relations, as well as the organization of standard technological processes between the [various] transportation media, and between them and the economy, through socialist collective work.

Of outstanding importance for the over-all fulfillment of the transportation needs are rationalization and reconstruction of the existing facilities and installations of transportation, and the application of the newest scientific achievements and the most advanced techniques in the transportation processes, in order to increase productivity and reduce the transportation cost. One of the principal methods for this must be the optimal exploitation of the available capacities and the general enforcement of the principle of strict economy, thereby putting to use all the reserves for solving the main economic problem and for the victory of socialism.

The successful solution of the main economic problem and the development of the entire intellectual and cultural life make great demands on the behavior and conduct of the people working in the transportation industry and require extensive economic and technical knowledge and capability on their part.

The most important condition for the successful fulfillment of the tasks of the Seven-Year Plan is the exact and timely execution of the measures provided in the reconstruction plans of the shops and services; high and rapid efficiency must be achieved with a minimum of means.

A broad and active collaboration of the workers is the condition for a firm and successful preparation and execution of the plans. It is therefore necessary that the workers, engineers, and scientists, as well as all other people working in the transportation industry, be incorporated more than before in the broad movement of socialist collective work.

It is necessary to incorporate, to a greater extent, the collective shop contracts and the berzirk and service agreements into the managerial activity. The trade-union managements must struggle more efficiently for the fulfillment of the obligations of these contracts for the fulfillment of the shop plan, for carrying out the socialist reconstruction, for enforcing the principle of performance, and for further improving health protection and safety, as well as social and cultural conditions.

The regular production discussions are a decisive measure for ensuring the active participation of the transport workers in the management and organization of socialist production. They evidently express the realization of the slogan, "Plan together, work together, govern together."

The best experiences and the proposals and suggestions of the workers are to be continually studied and generalized by all trade union managements. These have the duty to organize the broad participation of the workers in the regular production discussions.

The initiative of the transportation workers is to be directed toward the creation of Seven-Year Plan funds. Such good experiences as the check-book movement, the "Socialist Work Diary," etc., are to be generalized in all transportation services and in the services of the East German Railroads.

The experiences of the best in the contests and in the performance comparisons must lead to the development of an efficient socialist assistance to the lagging shops and services and must be extended to all shops and services through a continuous exchange of experience.

The trade union managements have the duty to represent the interests of the workers more consistently, and to take care of the improvement of living and working conditions, as well as of sanitation and safety, and must not tolerate heartlessness and red tape. They must be more decisive in their action against violations of the collective shop contracts and of the safety regulations, as well as of laws and regulations. Particular attention must be paid to the struggle for accident prevention in shops and outside, as well as for the reduction of sickness. Here too, the experiences of the brigades and socialist work institutions--for example, the Cahsella Brigade of the Berlin-East railroad station and the

"Karl Marx" Youth Brigade of the Halle Raw [possibly, Repair Shop], are to be studied and generalized, since they have already achieved outstanding results in accident prevention and reduction of sickness.

More attention is to be paid to the improvement of working conditions and of the social care for women employed in the transportation industry.

Railroads

Railroads occupy an outstanding position in the over-all transportation system.

Under socialist conditions, they are not only the material means for linking industry and agriculture and city and country, but they also support the transformation of the entire social life in the GDR.

In 1959, almost 50 percent of all goods were transported by the East German Railroads; this amounts to over 80 percent of all goods transported. The railroads will maintain their importance in the long run, since they are particularly suitable for mass and long-haul transportation of goods, owing to the technical properties of their equipment and their well-organized service. The socialist reconstruction of the railroads is therefore of great importance. Its purpose is, above all, to increase productivity, to reduce the cost of transportation, and to improve the quality of transportation and travel standards, as well as to reduce the time of transportation and improve the working conditions of transportation workers.

The conversion of the obsolete and uneconomical steam-locomotive service to electric and Diesel traction is of decisive importance in this respect. Another 528 kilometers of railroads will therefore be electrified during the Seven-Year Plan in the central and southern part of the GDR.

The Rostock-Berlin port-dispatch line, as well as the international long-distance lines that begin in Berlin, will be served by Diesel locomotives, in order to increase their capacity. The Neustrelitz railway repair shop will be constructed as a model for all future Diesel service and repair shops.

By 1965, 1,082 Diesel locomotives for line and switching service and 100 electric locomotives will be put into service. This provides the basis for the complete transformation of the types of traction.

The further improvement of superstructures, and in particular the creation of efficient long-distance lines will be the main point for the railroads during the Seven-Year Plan.

The capacities of the following long-distance lines are to be increased for speeds of 120 kilometers per hour and loads of 21 tons per axle, and are to be repaired and renewed systematically and with priority:

Berlin - Halle / Leipzig - Erfurt	by 6 January 1961
Berlin - Brandenburg - Magdeburg - Marienborn	by 31 December 1961
Berlin - Frankfurt (Oder)	by 31 December 1962
Berlin - Elsterwerda - Dresden	by 31 December 1964
Berlin - Neustrelitz - Stralsund / Rostock	by 31 December 1964

Care must be taken not to create any obstacles for a future increase in the technical speeds to 160 kilometers per hour.

Tracks must be serviced systematically in order to preserve the efficiency of the entire network.

Capacities have to be considerably increased in the renewal of superstructures and elaboration of plans. All building machines and equipment are to be utilized to the maximum by applying modern techniques. Four continuously operating mechanized trains for major constructions are to be created.

All these measures will contribute to doubling the productivity by 1965.

Special repair teams, operating with light equipment and machines, are to be assigned for the maintenance of tracks. The condition of switching tracks on multiple-junction stations is to be improved by the systematic use of standardized rail profiles and by welding the rails. Industrial methods and standard designs are to be applied in building superstructures and bridges.

The principal services branches are to work out and enforce consistent techniques which would make it possible to rationally apply new technology and to make full use of the capacity of machines and equipment.

The passing capacity, primarily of long-distance lines, is to be increased by means of modern safety installations. The first remote-controlled line section--Berlin-Gruenauer Kreuz-Genshagener Heide--is to be put into operation as of the 1960 winter schedule, as a test. The Halle-Bad Sulza and Neustrelitz-Lalendorf sections are to be equipped with remote-control equipment during the Seven-Year Plan.

In order to ensure maximum utilization of the safety installations of long-distance lines, central line switch boxes and remote control are to be installed after 1963 in collaboration with the industry, instead of the planned track-diagrammatic push-button control machines, taking into account the experience gained on test lines. The construction of new track-diagrammatic push-button control machines, provided in the plan for up to 1963, is to be checked for usefulness and correctness of location.

The automation of the telephone, teletype, and dispatch services is to be intensified. The newest technical equipment, standardized line cables, carrier-frequency installations, and directive-radio lines are to be used, at the same time, for long-distance transportation, and the regular use of line radio transmission is to be ensured. Modern radio-controlled shunting devices are to be used for improving the shunting service.

The railroad workers' initiative in improving the appearance of railroad installations is to be further promoted in order to achieve exemplary order, cleanliness, and discipline everywhere. This initiative is to be supported through the extension and reconstruction of stations and of travelers' welfare establishments, according to the most modern and expedient standards.

Beginning in 1961, train schedules are to be improved, while maintaining the principle of sectioning, so as to achieve a consistent increase in traveling speeds. Particularly in commuting, the traveling time of workers has to be reduced by a better scheduling, according to the example of the Halle-Leuna commuter transportation.

Rapid and favorably timed connections are to be established, starting in 1960, between Berlin and the berzirk seats of Leipzig, Halle, Erfurt, Magdeburg, Dresden, and Rostock. The equipment of the railway cars to be used in these connections is to be modernized. Feeder traffic on the secondary lines is to be improved by the increased use of light rail motorcars.

Travel and commuter service as well as travel standards are to be improved by the concentrated use of two-level cars and of modernized coaches. Two-level multiple-unit cars will be used primarily on connections in which there is a strong peak demand, with a travel time of not more than three hours.

At the end of the Seven-Year Plan, almost half of the coach pool of the East German Railroads will consist of new and reconstructed cars.

The reconstruction of the multiple-junction stations is to be started during the Seven-Year Plan. The Dresden-Friedrichstadt shunting station is to be equipped with new technical equipment, as the first example. The combined use of various kinds of rail brakes, such as interval (Abstands) and line (Laufziel) brakes with automatic end-of-line (Ablaufspeicher) and track-diagrammatic push-button control machines in connection with radio shunting and intercom installations, as well as the use of the newest technical equipment in transportation service, is to be tested. The experience gained is to be taken into account in the reconstruction of other multiple-junction stations.

The increase in mixed-cargo transportation calls for the increased use of standardized containers and fork carriages (Paletten). The containers must be designed so as to resist any weather and not require a closed warehouse. The mechanization of fork-carriage transportation and the handling of mixed-cargo is to be accomplished by means of lift trucks and fork lifts. The handling of containers in railroad junctions is to be accelerated by the use of appropriate cranes.

The rational course of the transportation process is to be achieved by box cars in accordance with the kind and category of goods; the cars have to be used to the maximum and formed into entire trains or car groups [with the same destination].

In order to improve the collaboration between the industry and agriculture and the East German Railroad, the railroad workers and the workers of the chemical plants in Bitterfeld created, through complex socialist collective work, an example of a unified technological transportation process which is useful to the chemical plants as well as to the railroad. The railroad and the large chemical plants of Bitterfeld and Wolfen matched their reconstruction plans as far as transportation problems are concerned; they gave each other socialist help and strove for the most rapid fulfillment of the plan in the chemical industry.

This example is to be extended to other industrial centers, taking into account the specific local conditions.

According to the examples of Werdau, Limbach, and Karl-Marx Stadt, communal loading and unloading shops are to be set up wherever the conditions for this are present. These shops are to be equipped with modern handling equipment. In all other cases in which enterprises do not have their own branch line, councils of the kreises and of the cities must set up, in collaboration with the services of the East German Railroad, loading and unloading units at the multiple-junction stations in order to rationalize the handling of goods of these enterprises and thus create the conditions for a rational use of the handling equipment of these enterprises.

The time the vehicles stay in the servicing and repair shops must be reduced through better techniques and through concentrated use of the equipment. Hard physical labor in coal handling at the railroad repair shops is to be essentially eliminated by 1961 through mechanization.

By 1965, a total of 29 automatic outdoor cleaning installations are to be put into service, 17 of these as early as 1960, in order to improve indoor and outdoor washing of coaches and to facilitate physically hard work. Furthermore, portable and stationary window-washing machines and modern mechanical devices for indoor cleaning will be used.

More rapid repair shops with standard equipment are to be set up at the most important stations for the technical maintenance of cars.

In order to achieve high productivity and quality in the maintenance of new vehicles and equipment, special repair shops of the German Railroad and maintenance shops are to be

created. The operating conditions and the economic operation of the vehicles and of the equipment is to be improved, mainly by applying the warranty procedure and using scientific methods for reducing waste--such as hardening of tires, bolts, and bushings, etc.--and by ultrasonic examination of axles.

Rational maintenance requires a reduction in the number of types of vehicles, installations, and equipment, and the exchangeability of structural elements through standardization. Techniques that would achieve an increase in productivity are to be applied for this purpose.

More facilities for production are to be provided at the repair shops, for repairing and maintaining Diesel and electric locomotives, for building box cars, manufacturing wheel sets for gauge change, containers, and equipment for the mechanization of track laying, as well as for manufacturing spare parts that are typical for railroads. Around-the-clock exploitation of the capacities is to be achieved in the important sections of repair shops, on which depends the entire vehicle repair work.

All measures must contribute to increased traffic safety, which is the highest principle of our socialist railroad industry. All railroad workers must always be aware of the fact that the life and health of travelers, as well as the preservation of valuable national property, depends on his actions. In accordance with the slogan "The comrades at the head of the struggle for safety, discipline, order, and higher quality in work," all services must increasingly struggle, together with the trade-union managements, against accidents, damage to goods, and other irregularities in transportation.

A unified power of command, personal responsibility, and disciplined, conscientious issuance and execution of orders are essential principles of management in railroad transportation.

The chairman, department heads, officials in charge, brigade officers, foremen, etc. therefore have the duty to ensure conscientious compliance with the service regulations and all other working instructions by a continuous education of the railroad workers.

In order to increase safety, all managements have to regularly check whether the regulations and working instructions are observed by every post, and they have to vigorously

struggle against lack of discipline, indolence, routine-like work, and noncompliance with service regulations. The service head, as manager of the service, is personally responsible for the entire operation. This struggle is to be efficiently supported by the political and educational work of the Party and trade-union organizations.

The regular care and maintenance of all installations, vehicles, and other equipment is of the utmost importance for safety in the railroad industry. Every railroad worker must therefore treat the national property entrusted to him as if it were his personal property.

In order to increase safety, order, and discipline in railroad transportation, it is necessary to set up a system of measures for improving shop instruction and qualifications, particularly for railroad workers in the operative service. These measures must include the improvement of shop instruction, the revision of the teaching program and the program of proposals, the issuance of educational and promotional material, and the creation of training permises and other equipment.

The political administration, the political sections, and the Party organizations bear full responsibility for the consistent and unified execution of the Party decision in the railroad industry.

The most important tasks of the political organizations of the East German Railroad consist of:

[1] the qualified direction of the base organizations for increasing the fighting strength of the Party;
[2] the education of all railroad workers to a higher socialist consciousness;
[3] the mobilization and development of their creative capabilities for higher performances in fulfilling the plan.

The political organizations must help and assist the Party organizations in the organization of Party control and in the execution and study of performance comparisons. This will strengthen the Party's influence on the fulfillment of the transportation plans in all their parts, and in the struggle against accidents and irregularities, as well as for the improvement of discipline and order.

The political organizations and the Party organizations have the tasks of recognizing anything new and progressive and of promoting it and carrying it out in spite of bureaucratic and ideological obstacles.

The fulfillment of the new and greater tasks requires that the comrades in the political organizations themselves acquire great Marxist-Leninist as well as technical knowledge and that they help the Party and trade-union organizations to develop everywhere an atmosphere of learning.

The watchfulness and defense-readiness of the railroad workers is to be further increased. Party education in the fighting groups, in particular, and among the voluntary helpers of the transportation police is to be considerably increased for this purpose. Every Party worker must be aware of his great responsibility toward the great tasks resulting for the railroads from the Seven-Year Plan; his behavior and actions must be exemplary and, as a man of confidence, he must be a model in establishing closer socialist relations between the Party and all railroad workers.

Motor Transportation, City Transit, and Roads

The importance of motor transportation is increasing every year, owing to its increasing share in the total transportation performances and the increasing rate of motorization. The transportation of goods, in tons, is to be increased [over 1958] by 156 percent--in the nationalized public transportation alone by 520 percent--and the passenger transportation by 150 percent.

The performances in motor repairs will increase by 177 percent by 1965.

The increase in performances requires the most rational forms of organization, the technically most advanced equipment, improved quality in transportation, and a continuous reduction in the cost of transportation. The present dispersal of motor transportation is to be overcome and, on the basis of modern techniques and shop organization, large enterprises with special departments, as well as an extensive network of branch and sub-offices are to be created.

The freight space in motor transportation has to be used to a maximum in order to achieve high transportation performances. Wherever an effective improvement of transportation has been achieved for the entire national economy, vehicles are to be taken out of plant transportation, according to plan. The nationalized motor transportation must extend the forms of collaboration with industry, agriculture, and trade through exchanges of experience, shop comparisons, creation of transportation pools, etc.

The utilization of the transport capacities is to be increased through multiple-shift and continuous use of vehicles on Sundays and holidays. Together with the construction industry and trade, examples of the day-and-night service to construction sites, shops, and restaurants are to be created in the bezirk seats in 1960. The experience gained in this is to be rapidly generalized and extended to the rest of the economy. In this connection, measures have to be worked out that would ensure the material interest of the driving personnel in assisting in loading and unloading.

In order to improve the quality of transportation, the portion of special vehicles is to be increased in accordance with the economic needs by the reconstruction of available and the addition of new vehicles.

The development and production of vehicles for the transportation of large panels, heavy loads, of milk and fresh food, as well as for international transportation, are to be promoted.

In order to improve the supply to the economy and population, freight taxi transportation is to be introduced in the bezirk seat and industrial centers by 1961. House-to-house service and accelerated transportation is to be achieved by the extension of concentrated cartage to the junction-point zones to be created for mixed-cargo [rail] transportation. The delay in transportation between adjacent junction-point zones must be reduced by at least three days. House-to-house baggage transportation is to be extended, in collaboration with the East German Railroad, to the most important vacation centers by 1961.

The point is to exploit all available reserves through a favorable routing and through the reduction of the circulation and travel times of the vehicles, always to use clean vehicles, and to increase the travel standards.

The transportation conditions in the commuter and long-distance bus transportation of workers are to be considerably improved. The number of available seats is to be increased by the addition of modern buses, trolley buses, and streetcars, and by rebuilding existing vehicles. In order to overcome peak demands in the transportation of workers in large cities and industrial centers, the introduction of staggered working hours is to be started in collaboration with the local economic organizations.

The increase of traveling speeds and safety and the use of new spacious streetcars require a maximum improvement of the streetcar track network. The reconstruction of the streetcar system of Karl-Marx Stadt is to be achieved rapidly, in stages, according to the most modern standards.

The number of taxis is to be increased in the bezirk seats, primarily in Berlin, Leipzig, Rostock, and Dresden. The number of [taxi] stands is to be increased and the mobility of taxis is to be improved by the use of modern calling installations.

The population's desire to rent cars and motorcycles is to be met by the creation of rental stations in large cities and industrial centers by 1961.

The network of driving schools for the population is to be extended, and the quality of instruction is to be improved.

The four-fold increase in the degree of motorization during the Seven-Year Plan, particularly for individual transportation, calls for the creation of a system of service and maintenance shops. This requires that 120 service and maintenance stations be reconstructed or newly built in the nationalized sector, and that at least 75 such stations be put into service by production cooperatives and shops with state participation.

Service stations with customer service that lives up to international standards, with the most modern equipment for repairing, servicing, and maintaining of cars and motorcycles, have to be created primarily in Berlin, Leipzig, Rostock, and Dresden.

An extensive network of servicing shops is to be created in order to ensure permanent operating conditions and safety of motor vehicles. Continuous around-the-clock service, as

well as road assistance and towing service, are to be provided by applying the multiple-shift system in motor repair.

The Minol VEB has to extend its network of gas stations and to develop it in order to ensure the supply of fuel and lubricants, as well as service and maintenance of vehicles--especially on the autobahn and on the long-distance highways, as well as in the newly-created industrial centers and vacation centers.

With respect to the repair of motor vehicles, craftsmen-type methods have to be replaced during the Seven-Year Plan by industrial methods.

In order to increase productivity in the overhauling of industrial vehicles, conditions for the application of the method of exchange of vehicles, or in the case of medium or light repairs, the exchange of [machine] units have to be created, to an increasing extent, for all vehicles.

With respect to the repair of motor vehicles, and in connection with the consolidation of small shops into large enterprises, the work has to be specialized in certain makes and types of motor vehicles and in certain types of repairs. Thirty-five new shops have to be built or completed for medium and small repairs, and 42 shops have to be extended.

Starting in 1961, 20 percent of the spare-part needs are to be satisfied by the salvaging of parts of motor vehicles, in order to save material. The present method of measuring productivity and of planning performance in the repair of motor vehicles is not well adapted for an economical consumption of material or for a reduction of the hours of work. New methods therefore have to be elaborated on the basis of the performance of each shop and of the regular performances, in order to raise quality and reduce costs.

Mechanical washing and servicing installations have to be set up in the public nationalized motor transportation shops when these are being rebuilt or extended. Technically advanced testing and measuring devices are to be used in order to ensure safety, improve quality, and increase productivity in motor repair work. The traffic safety units are to be developed into an efficient instrument for increasing the safety in road traffic.

The roads have to meet all the requirements of a continuously increasing traffic by designs that permite heavy loads and high speeds and ensure a great passing capacity, while offering maximum safety and comfort to the users.

It is the purpose of the socialist reconstruction in the road-building enterprises to build and maintain roads more rapidly, better, and more cheaply. In order to increase productivity, new methods and techniques have to be used, and the organization of work is to be fundamentally changed.

The construction of the autobahn between Rostock and Berlin according to the newest technical principles of transportation and building, the consolidation of 25 percent of the state highways and of 17 percent of all bezirk highways, as well as of communal roads with heavy professional and agricultural traffic, are important tasks of the Seven-Year Plan. This includes, furthermore, the elimination of narrow road sections and curves and crossings with poor visibility, as well as the construction of more by-passes around settlements.

This requires the general use of modern technical equipment. The road-building workers therefore turn to such methods as ground stabilization, intensified building of substructures of vibration-compacted coarse gravel, sand and gravel surfaces, and wear-resistant concrete surfaces.

Mass production in the building industry also requires the use of prefabricated elements in bridge-building for substructures, columns, and abutments, making use of all possibilities offered by standardization. By 1965, 70 percent of all superstructures of road bridges with a span of up to 12 meters must be built of prefabricated elements. The still existing temporary bridges on the autobahn, long-distance, and bezirk highways are to be replaced by permanent structures.

As the rate of exploitation of all traffic installations is increasing, the maintenance and repair of roads and bridges must be improved. The experience of innovators with respect to the mechanization of maintenance work is to be used in the development and production of small equipment and is to be applied as rapidly as possible to road maintenance.

The utmost attention is to be given to the increasing requirements with respect to winter road service, which is to be mechanized--particularly on the autobahn, the long-distance

highways, and within cities. The fight against sleet must be conducted, to an increasing extent, by means of chemicals. The social and cultural care of the workers employed in the winter service and maintenance must be improved. In order to increase operational availability in road maintenance, particularly in the winter service, and to improve the social and cultural conditions of the road workers, stations have to be created in which the workers can live and where their equipment can be stored, ready for action.

Road signs and direction-indicating installations on all highways are to be adapted by 1961 to the international standards with respect to their reflecting properties.

In order to ensure a consistent development of the highway syste, all problems concerning the documentation and planning of road transportation, the control of constructions and roads, and standardization, are to be centrally solved by the Transportation Ministry via the Control Service for Roads (Strassenbau-aufsichtsamt) of the bezirk.

The introduction of new technical equipment for road construction requires specialization and concentration of production. The nationalized road-building enterprises or parts of enterprises available in the communities, cities, and kreises are to be unified at the bezirk and kreis level and are to be equipped with modern equipment.

The roadsides, especially of communal roads and paths, are to be planted in order to increase fruit production and improve the landscape.

Navigation and Waterways

Our sea navigation ensures respect and esteem for the flag of the first German workers' and peasants' state on the maritime routes and in the principal ports of the world. It carries out a considerable part of the sea transportation of our foreign trade. To do this, it is necessary to double the tonnage by 1961 and to triple it by 1965, as compared to 1958. The over 100 freighters of the German Shipping House (Deutsche Seereederei) will then transport almost 40 percent of the overseas trade.

Sea transportation is to be qualitatively improved by putting into service special ships during the Seven-Year Plan.

The deck gear, machines, and nautical installations of the ships now in service are to be modernized through the application of the newest scientific and technical principles.

The economic exploitation of the tonnage is to be achieved through an extensive division of labor among the socialist countries. Regular trips between the ports of the German Democratic Republic and those of the Soviet Union, the Chinese People's Republic and Albania, as well as those of the Netherlands, Belgium, and the Near East must become more frequent and more regular. New shipping lines are to be established with West Africa, India, South America, and England.

The quality of transportation is to be increased by rapid handling in the ports and by more method and punctuality in ship transportation. The lying days in our ports are to be reduced, mainly by a better cooperation with foreign trade and the railroads, as well as by timely notification of the arrival of ships.

The time a ship is in action and the full use of its capacity are to be increased through a continuous improvement of maintenance and technical care of the fleet by means of continuous partial classification of the ship norms, of the repair work, and by means of more repairs on board, especially during lying days, by its own rapid-repair brigades.

All these measures must result in a consistent decrease in the cost of sea transportation.

Through their dignified behavior and their responsibility for ship and cargo, the sailors strengthen the reputation of the German Democratic Republic. This calls for an intensified socialist education of the crews, the enforcement of the principle of socialist collective work, for exemplary order in working, and for an increase in discipline and moral. The political and Party organizations of the merchant marine have a great responsibility in this respect. Their most important task is to enable the Party organizations to mobilize all crew members for the struggle to fulfill the plan through high-quality Party work, in particular through political and ideological education.

It was on 1 May 1960 that the first freight was handled at the Rostock overseas port. The consolidation of the Rostock overseas port as a rapid port in the Baltic Sea area is to be continued by using modern handling equipment and through the complex mechanization of the principal working processes. The transshipment capacity of this port will amount to 6.7 million tons in 1965. The economic exploitation of the transportation installations and of the equipment, as well as the quality of the transshipment and warehouse work, are to be improved by specializing and concentrating the turnover of the port. In order to improve the working conditions, it is necessary to accelerate the small-scale mechanization of the warehouse and storage work and the internal transportation of shops. The cargo-handling reserves of mecium sea and inland ports is to be used to an increasing extent.

The increasing performances of river navigation require its extensive motorization. The number of self-propelled units is to be increased to 40 percent of the total tonnage by the construction of 119,000 tons of new ships.

The organization of transportation is to be changed and new transportation techniques which would make it possible to exploit to a maximum the means of transportation are to be introduced in order to improve the profitability of river transportation. The most important tasks in this respect are the extension of around-the-clock service, the specialized use of the freight capacity in "standard relations" (Standard-relationen), introduction of the "push method" (Schubverfahren) in some sections, and the extension and improvement of ship transportation according to timetables.

By 1961 and by the end of the Seven-Year Plan 1,000 and 1,700 berths respectively have to be provided on seagoing passenger ships for combined ship-air pleasure cruises for workers in the Mediterranean and on the Black Sea, as well as for vacation cruises in the area of the North and Baltic Seas, so that 20,000 vacationers can be transported by these ships by 1965.

Traffic to the resort places on the Baltic Sea, and combined road cruises--mainly in the Berlin and Dresden area--are to be organized for vacation and excursion cruises on the river and coastal passenger fleet.

All structural, service, and other measures on the inland and sea waterways have to directly serve the increase in ship transportation.

The depths of immersion on the main waterways, especially the Elbe, are to be increased in order to achieve a better equalization of loads in inland navigation. The navigation conditions on the Saale River are to be improved by means of leveling and excavation. The circulation of the fleet is to be accelerated by the mechanization of the hydraulic installations. Ten more ship-towing installations are to be created by 1963 at the locks that are important from the viewpoint of transportation.

The electrification of the most important locks and the signalization of the main waterways for night navigation are to be complete in 1960, so that, starting in 1961, the conditions for the establishment of around-the-clock navigation in inland water transportation on the main waterways will exist.

Air Transportation

The extension, according to plan, of international and national air transportation must satisfy the needs of the continuously increasing passenger traffic and must continually increase the share of the GDR in international air traffic.

The share of air freight transportation in international transportation is to be increased by exploiting all transportation capacities of the cargo planes and the free space on passenger planes. Very valuable, perishable, or other goods that are especially suitable for air transport shall be transported in planes to a greater extent than has been done so far.

Full utilization of the available air freight capacities is to be achieved through an improved collaboration between the socialist air transport enterprises.

A distribution of the transportation tasks, according to plan and in accordance with the other transportation media, is to be organized for the development of domestic air transportation.

Round trip (Rundflugverkehr) air transportation is to be consolidated. The passenger feeder service and freight forwarding tasks are to be transferred to the local transportation enterprises and are to be settled together with them.

Air safety and the technical and commercial service on the airports of the GDR have to be brought to a top technical and organizational state at an accelerated rate. The feeder and handling times are to be considerably reduced. The comfort of the passengers has to be increased.

The consolidation of the Berlin-Schoenfeld Airport into a large airport that meets all international requirements and lives up to international standards must be completed during the Seven-Year Plan. Parts of the new installations are to be put into use as early as 1962. The most important airports in the southern part of the GDR are to be further consolidated.

Dusting of chemicals by planes for the benefit of socialist agriculture is to be considerably expanded. Air bases will be created for this purpose in the Berlin, Magdeburg, Anklam, and Kyritz area.

The Assistance of the Transportation Industry to Socialist Agriculture

All services, enterprises and research institutes of the transportation industry actively help and assist the development of socialist agriculture, in close collaboration with the Party and trade union managements. Sponsorship contracts are to be concluded for this purpose and the therein commitments must be included in the collective contracts of the enterprises.

In close coordination with each other, the railroad, motor, water, and air transport must ensure the dispatch of agricultural products and the transportation for the supply to agriculture. The East German Railroad has to reduce the transportation time for live animals and for perishable goods. The transportation of milk, eggs, fresh vegetables, and fruit by road and by the German Lufthansa to large cities must be organized in such a way that these products will always reach the population in a fresh state.

The development of cultural life in the socialist villages must be supported by the improvement of traffic conditions in road transportation and on the East German Railroad.

Loading and unloading centers are to be created in rural areas and the East German Railroad has to establish freight dispatch installations. In order to accelerate the handling of freight in these centers, the railroad has to give guidance and assistance to the departments of agriculture, collection, and forestry of the kreis councils for the establishment of loading and unloading collectives. These have to organize the mutual use of all available loading equipment together with the LPG's [Cooperative farms], VEG's [state farms], and BHG's [not identified], as well as with the services of the East German Railroad.

Capacities for the repair of agricultural machinery and for the manufacture of agricultural equipment and spare parts have to be set aside by the repair and maintenance shops of the motor, water, and railroad transportation industry.

The local road-building organizations have to make sure that by 1965--primarily in the northern bezirks of the GDR--all villages are linked to the public road network by a permanent road.

Travel Will Become More Beautiful and More Pleasant for Our Workers

The development of the material and cultural standard of living of the population of the GDR requires an improvement in the travel standards. The point now is to make traveling more comfortable and more beautiful.

In order to improve the interior decoration of coaches, 1,850 second-class coaches will be equipped with foam-rubber seats by 1961. The interior decoration of a great number of coaches is to be modernized for long-distance transport. By 1961, 400 infants' berths are to be created in the "mother-and-child" compartments. The number of seats in non-smoker comparts will be increased to 50 percent of all the seats.

The transportation media have to be equipped with radio and transmission installations and their interios decoration has to be modernized.

In order to improve travelers' comfort, club and entertainment premises are to be created by 1965 at 30 junction points where a great number of people change trains, such as Berlin-East and Pasewalk in 1960, and Magdeburg, Nordhausen, Dessau, and Eisenach in 1961. The travelers will be entertained there with radio and television and will have the possibility of reading the newest newspapers, periodicals, and books.

Service to travelers in trains and during stays at stations is to be considerably improved by Mitropa [Mitteleuropaeisches Reisebuero; Central-European Travel Agency]. Easily movable sales wagons, automats, and standard booths are to be used for this purpose. In long-distance trains, service to passengers at their seats has to be improved. A wide range of merchandise must be offered (hygienically packed food and soft drinks). More self-service restaurants like the "Mitropa-Express" at Karl-Marx Stadt, shops for the care of shoes and clothes, as well as barber shops and baths have to be created.

Motels and rest points will be created as the Berlin-Rostock autobahn is being built. The network of rest points on the other autobahns will be extended in accordance with the increasing needs. The catering is to be assigned to Mitropa. The sale of food and drinks during trips is to be increased on long-distance buses in order to improve travel comfort.

Excursions and tourist traffic on trains, buses, and passenger ships in the GDR and to foreign countries must be extended in collaboration with the Free German Federation of Trade Unions (Freier Duetscher Gewerkschaftsbund) and with the German Travel Agency (Deutsches Reisebuero). The German Travel Agency, with the support of the local governmental agencies, must take care of the service at temporary stops and at the final destination by concluding contracts. In the case of combined rail-bus-ship transportation to vacation centers, through-service must be organized for passengers and baggage in order to ensure comfort.

In order to improve travel connections and their timetables it is necessary that the administration and services of the East German Railroad, the road transportation administrations of the bezirks, and the shipping lines establish close contact with the transportation units and committees of the local people's representative [organizations] (Volksvertretung) and ensure the rapid attention to all suggestions and criticism.

IV. To Ensure the Most Advanced Scientific and Technical Standards in the Transportation Industry

In order to continuously improve the fulfillment of the transportation needs, it is necessary that the development of new vehicles and traffic installations correspond to the most advanced technical and scientific standards; that, in the transportation industry also, standardization, as well as specialization and concentration be consistently enforced; that working processes by mechanized; and that progressive technological processes be introduced for the extensive rationalization of the transportation processes and for the reduction of transportation costs.

The principal method for achieving this purpose is socialist collective work, according to the example of the contest of research and development units of the Blankenburg Transportation Research and Development Plant on achieving international standards in the construction of vehicles, machines, and equipment.

The future prospects for the transportation media resulting from the division of labor and cooperation in the GDR and in the entire socialist camp are to be more thoroughly studied and made the center of the work of the managerial organs in the transportation industry to a greater extent than in the past. In this connection, we must proceed from an extensive analysis of the development of the transportation requirements of the economy and of the travel needs of the population.

A knowledge of the capacities, the technical equipment, and the trends of development in the transportation industries of the most advanced countries of the two world systems is an important condition for scientific and technical progress and for the necessary course of the research and development work. In order to have a broad view of this, it is necessary to create a documentation center and a system for permanent comparison of the technical and economic transportation indices, for the rapid notification of the managements, the socialist brigades, and working collectives, as well as all scientists, technicians, and economists.

The newest achievements in the field of electronics are to be applied for high efficiency in the management, planning, and organization of transportation processes. Thus, operations for ascertaining performances and for interpreting and con-

trolling results in the field of personnel, statistics, accounts, etc. must be rationalized by means of electronic equipment.

The transition from 16-2/3 Hertz single-phase alternating current to 50 Hertz is anticipated in the further electrification of tracks of the East German Railroad. Since there will then be two current systems in the railroad network of the GDR, two-current-system blocks have to be developed on a semiconductor basis.

The Northern-Outer-Berlin-Ring (Noerdlicher-Berliner Aussenring) test track is to be completed in 1961 for testing electric locomotives of 50 Hertz, alternating current. The electric locomotive series E 11 is also to be tested by 1961; the result is to be taken into account in the series production. A 4,000-horsepower two-system electric locomotive must be developed for heavy freight trains.

The prototypes of the Diesel locomotives to be built during the Seven-Year Plan must be tested in collaboration with the manufacturers; the results must be thoroughly studied and taken into account in the series production. A heavy Diesel locomotive must be developed for the heaviest freight trains with high speed. Standardized equipment and installations must be created in the railroad repair shops for the maintenance of electric nnd Diesel locomotives.

Large-volume cars for bulk transportation with pivot mounting must be developed for speeds of up to 120 kilometers per hour, taking into account the requirements of mechanized loading and unloading. The design, prototype construction, and testing of multiple-purpose and special cars must be rapidly concluded.

A large series of wheel sets for changing gauge widths is to be tested in 1960. The development work for improving these wheel sets must be accelerated, taking into account the test results, so that series production can be started, thus creating the conditions for the transportation of important and easily perishable goods in exchange with the Soviet Union, without loss of value in transshipment.

The development and construction of an automatic coupling and of a heavy-duty brake must be completed, taking into account international experiences and requirements.

The development of coaches for rapid trains for international and long-distance traffic must be completed in such a way that the prototype will be built in 1961 and series production can be started by 1963.

The two-level multiple-unit train system must be used as the basis for the further development of light medium-distance coaches with high stability and good traveling properties.

The installations for lighting, heating, and ventilation, as well as the installations for a smooth, shockfree, and noiseless operation of coaches must be improved according to the most modern principles, in order to increase travel comfort.

The mechanisms that have been developed so far for the indoor and outdoor fittings of vehicles have to be improved, and new labor-saving equipment and devices must be created.

As to track maintenance, priority must be given to the complex mechanization of the processes for the renewal of the roadbed surface and for the processing, according to plan. The techniques necessary for this purpose have to be worked out as early as 1960. It must be made certain that one kilometer of tracks can be renewed in six hours; prototypes of the equipment for moving portable line sections, the ballast cleaning machine with a performance of 200 meters per hour, the embankment plow, the ballasting machines, and the equipment for handling ballast residues have to be ready by 1961.

In order to increase safety on railroads and save labor in the operative and machine services of the East German Railroad, it is necessary to complete, by 1964, the development of linear train control and signalization in the operator's cabin in connection with automatic section blocking. The application of industrial television at the East German Railroad is to be introduced at an accelerated rate, using available and new findings. Installations for radio transmission must be improved by the use of semiconductors and must be brought up to international standards.

The buses assigned for road transportation must be very maneuverable and must be equipped with fully automatic gear shift, underfloor engines, and pneumatic steering.

The development of heavy-duty ultra-shortwave installations free of interference is necessary for increasing the range of action of the dispatch service for taxis and for construction-site transportation.

The development of equipment for interference-free testing of structural parts already mounted in motor vehicles must be accelerated.

In order to save labor and to speed up traffic, it is necessary to develop automatic ticket vending machines, both stationary and suitable for mounting in vehicles, as well as automatic ticket printing and change-returning machines.

The main trend in the introduction of new road building methods lies in the testing and application of processes for the preparation of hot-mixed bituminous gravel bases, low-pore bituminous gravel and sand surfaces, and ground stabilization with bitumen and cement.

The highly productive methods of making substructures of vibration-compacted rough gravel, as well as concrete and asphalt surfaces, must be improved.

The development in the construction of road and railroad bridges must be centered around the application of the prefabrication method, with prestressed elements for superstructures as well as for columns and abutments.

The tension block (spannblock) method and the cantilever building method have to be introduced. The fully welded meshed-structure and light construction methods must be further developed in steel bridge construction.

Standardization in road construction concerns mainly the signal devices, bridges, and underpasses, as well as frequently used structural elements.

Scientific and technical progress requires the application of standard mounting methods in constructions. The necessary condition for this is to bindingly establish standard types for frequently occurring structures--for example, relay and telephone structures, social buildings, maintenance and service installations for motor transportation, stopovers and waiting rooms, etc. The mechanization of all building processes in transportation and in road maintenance must mainly lead to the elimination of hard physical work. There-

fore, the main points in this development are fully automatic installations for making bituminous surfaces, vibration-compacting machines, rubber-wheeled rollers, machines for making the subgrade of embankments and for excavating ditches, self-propelled machines for soil-cement stabilization, concrete and asphalt surfacing machines for widths up to 7.5 meters, loading and unloading equipment, and machines for winter road service.

The development of river navigation is to be directed toward essentially new operational techniques and operative equipment to be used. In order to do this, it is necessary to complete, at a faster rate, the design and prototype construction of self-propelled barges (Schubboote), lighter units, and floating flexible containers, with the corresponding handling equipment.

Service on board sea ships must be made more rational by applying steering, measuring and control equipment, and safety in navigation must be further increased. Special air-conditioning equipment for sea transportation and for handling must be developed in order to guarantee the largest possible share in the transportation of fruit and refrigerated cargo.

The research work concerning the effect of excavations in rivers must be completed in 1960. The basic research for determining the laws governing the motion of sedimentary material and silt must be completed as rapidly as possible, in order to increase navigational safety. In order to increase traveling speed on canals and rivers, it is necessary to complete, by 1965, the hydraulic investigation of the interaction of various effects existing between the traveling ship and the bottom or embankment of a canal.

The transportation of containers, as a means of extensive rationalization of packing, storage, handling, and transportation of produced goods, must be considerably extended. This requires the standardization of the containers themselves, of the necessary warehouse and handling installations, as well as of the means of transportation. The development of flexible containers for the transportation of liquids must be completed.

The elaboration of complex transportation plans for the most important traffic junctions in Berlin, Leipzig, Dresden, Erfurt, Karl-Marx Stadt, Halle, Magdeburg, and Rostock is a very important task of the transportation industry at the

present time. On the basis of the social development in certain areas, these plans will ensure the long-range prospects in transportation relations of these junctions, according to the social and individual needs. This will establish the long-range development of the transportation media, regardless of the form of their organization, while special consideration is given to city planning.

Problems which are of great practical and theoretical importance to the long-range development of the transportation industry must be scientifically examined during the Seven-Year Plan, so that the results will be fully effective as early as 1965. Research during the Seven-Year Plan must therefore be considerably improved by recruiting the assistance of advanced schools, especially the Advanced School for Transportation, and other institutions of the transportation industry.

The structural change which will take place in the entire national economy in the next few years, and which is due to new technical and scientific achievements, makes it necessary to thoroughly study its effects on the transportation industry--for example, on the freight structure, the development of the flow of goods, the division of labor among the transportation media, the vehicles of transportation, and the transportation networks.

The development of international and domestic passenger traffic, especially the rapid increase in motor and air transport, requires the elaboration of precise scientific material concerning the development of the transportation media, the economically expedient division of labor among the transportation needs, especially in medium and long-distance transportation, as well as solutions for relieving the area available for traffic in cities.

Possibilities of further automation of the working processes in transportation must be examined in order to increase the productivity of these processes and safety in service.

Exact data have to be elaborated on the basis of the physical investigation of the relationship of forces between wheel and rail, in order to develop new superstructures and tracks for high speeds and heavy axle loads, as well as to improve the running properties of bogies and car frames.

V. All Care and Assistance is Required of the Transportation Workers

The solution of the increasing political, economic, and technical problems that arise for the transportation industry during the period of construction of socialism depends decisively on the conscious creative activity of all workers.

The workers, employees, and white-collar personnel of the transportation industry must distinguish themselves by their high political consciousness, high technical capability, and extensive cultural education and must be full of love and enthusiasm for socialism.

The great technical transformations in the transportation industry require, to an increasing extent, the appointment of economically and technically qualified personnel trained in special schools. The character of the transportation processes require the congruent action of large collectives in the interests of a safe and rapid transportation of goods and passengers. All railroad workers, drivers, ship and plane crews, and city transit workers must therefore have a great sense of responsibility. The complicated transportation process requires strict and conscious discipline on the part of all workers; this includes participation in the management of the transportation industry.

The increased loads of the transportation industry must be carried without any substantial increase in manpower. It is therefore primarily necessary to mechanize the activities requiring heavy labor. The more intensive employment in the transportation industry of women who are not yet working is another possibility.

In order to increase the educational level and versatility of the labor force, the transportation workers will acquire knowledge for additional activities or a second occupation. The present one-sided training must be overcome by a versatile system of multiple qualification. Thus, for example, the workers in the service and traffic departments of the East German Railroads must, in addition to a good specific knowledge, also possess a fundamental knowledge of the cooperation between the various services of the railroad industry, transportation economics, and the functioning of modern safety and other technical equipment. All construction workers will receive instruction in the operation and

maintenance of construction machines and equipment. The nautical personnel of the fleet will acquire, in particular, further knowledge of mechanics and economics.

This movement of learning must be supported, in particular, in the socialist brigades and must be set forth in the brigade- and management-training contracts.

In accordance with the example of the women's program of the East German Railroad, complex long-range measures for the general encouragement of women have to be established in all branches of the transportation industry. The managers of services and enterprises are obliged to provide suitable positions for women in their jurisdiction. This includes possibilities for part-time employment. More women must be trained for managerial positions. Institutions for the care of children must be set up in important enterprises, schools, and other training establishments of the transportation industry.

The transportation industry offers to young people an interesting field of activity and great possibilities of specialization. It is therefore necessary to acquaint them, during their polytechnical training in the general-purpose schools, with the tasks and prospects of the transportation industry. Friendship and sponsorship contracts have to be concluded for this purpose, and instructors have to be provided for the instruction days in production.

The occupational patterns and the training plans must be adapted to the increasing requirements and the development of technology and economics in the individual services of the transportation media.

Vocational training must be solidly based on the experience of the socialist brigades, in order to improve class instruction of apprentices. The teaching and training staff must be prepared for the new requirements by a close relationship with socialist practice.

In order to raise the qualifications of adults, it is necessary to establish vocational academies at traffic junction points, with the assistance of Party and trade union organizations; these academies must be gradually developed into educational centers for workers of all transportation media, with due consideration for work in shifts. These vocational academies must also provide correspondence courses

for personnel in the operative services of the railroad and for the traveling personnel of river navigation. The work at the evening courses of the trade unions, the vocational academies, clubs, and houses of culture must be substantially improved in order to enable the trade unions to promote a better atmosphere of socialist learning and living.

The enterprises and services must increase the recruiting of the most able people for study at vocational schools and at the Advanced School of Transportation. In order to prepare this study, it is necessary to organize courses for preparing the special maturity examination. In order to support this measure, it will be necessary to develop the work of the permanent commissions for the supply of scientific and technical personnel in all administrations, enterprises, and services.

The colleges and vocational schools for transportation must be developed into socialist institutions of learning which will train managerial personnel loyal to the workers' and peasants' state, educated according to the ten commandments of socialist morality, and equipped with the newest scientific and technical knowledge; this can be achieved by a continuous improvement of education, instruction, and research, and by a closer contact with practice. The graduates of the advanced and technical schools have to be more boldly given responsible assignments. Instruction and research must continuously be centered around the new problems facing the transportation industry and the new methods that are developing in practical work.

More attention must be given to the political and professional reinforcement of the teaching staff of advanced and technical schools, by managing personnel from the ranks.

A specialized training system must be set up by these schools in connection with the Chamber of Technology (Kammer der Technik) for the advanced training of engineers now practicing. They must thus be familiarized with the latest knowledge and the most advanced working methods, as well as with the technical and economic long-range prospects.

In order to meet the demand for [teaching] staffs for technical schools, it will be necessary to begin as early as this year with combined studies at technical schools. Evening courses at technical schools for experienced transport workers must be organized in Berlin in 1960 and in Dresden and Leipzig in 1961.

Experienced supervisory personnel, especially members of socialist brigades and working collectives, must be sent to study at the Industrial Institute of the Advanced Schools of Transportation.

In order to provide nautical and technical supervisory personnel for the merchant marine, it will be necessary to increase, according to plan, the training capacities of the freighters and training ships.

The exemplary performances and difficult working conditions of the transportation workers require that all managements of enterprises and services continually improve the conditions of the social and cultural establishments. The initiative of all workers must therefore be directed toward the utilization of all local possibilities and means for giving to the social and cultural establishments an appearance that is in conformity with our social development. The funds set aside for this purpose in the collective contracts of enterprises and service agreements must be utilized completely.

Dormitories, homes for unmarried personnel, plant cafeterias, day nurseries, and kindergartens must be extended and adapted to the working rhythm in transportation, so that it may be used by all transportation media and facilitate the assignment and management of the workers.

Trade union control over the use of these establishments and facilities, as well as over the use of investments and means for repair, maintenance, and extension must be intensified.

Healthy, willing, and eager people are the most important prerequisites for the fulfillment of the tasks faced by the transportation industry. Physicians, nurses, and other personnel of the medical service of the transportation industry have a great responsibility in this respect.

Their main task is to continuously ensure safety in transportation by the strict enforcement of fitness regulations and by systematic examination of workers, on the basis of unity of prevention, treatment, and after-care; the problems of re-incorporation into the working process (rehabilitation) are of great importance in this respect.

The medical care of all transportation workers must be further improved by the construction and extension of clinics,

dispensaries, and infirmaries. The sanatkriums must be fully utilized for the needs of transportation workers. The capacity of their own sanatoriums will be extended by taking over suitable premises, Particular attention must be paid to hygiene and medical protection of workers in the transportation industry, and to the sanitary control of transportation facilities and installations.

Medical service in seaports and at airports must be extended. The medical service of the transportation industry collaborates in the fight against accidents on the basis of scientifically founded analyses; it organizes rescue services in all branches of the transportation industry; and it develops an efficient aid in the case of street accidents, in collaboration with the German Red Cross and with the local organizations of the state health service.

The Economy Supports the Transportation Industry in the Fulfillment of Its Tasks

To carry out transport work and renew and maintain roads, installations, vehicles, and machines, the transportation industry needs every year considerable quantities of power, working and building material, fuel, lubricants, spare parts and other material, in order to fully satisfy the continuously increasing transportation needs of the population and the economy.

Workers in all branches of the economy must therefore realize that the transportation media can supply their enterprises only if the needs of the transportation industry are satisfied continuously, on time, and in the best quality and exact type.

The metallurgical enterprises must provide high-quality wear- and corrosion-resistant steel, in order to make it possible to use structural and sheet metal of smaller dimensions in transportation and to increase the service life of installations and equipment, as well as to use light construction for vehicles and structures as much as possible. In this respect, it will be necessary to create the conditions for the supply of a wide range of profiles.

The chemical enterprises must satisfy the need for foam rubber and plastics, such as Melakard, Plastaped, polyester products, etc. for the modernization and maintenance of the vehicle pool.

It must be ensured through socialist collaboration between the transportation media and the supplying industries that all vehicles, installations, and equipment to be developed correspond to international standards.

The transition from steam to Diesel and electric traction is of decisive importance for the increase in quality of the transportation performances and of the capacities of the East German Railroads.

By 1965, the mechanical industry and the Ministry of Foreign and Domestic German Trade must supply 1,082 Diesel locomotives of various capacities and 100 series E 11 electric locomotives. Their design, capacity, and running properties must conform to international standards with respect to development and technology. Their structural parts must be standardized as much as possible, and all parts that are subject to erosion must be easily accessible.

The currently used friction bearings must be replaced by roller bearings in order to increase the failure-free performance per kilometer of coaches and freight cars of the East German Railroads, and to reduce repair expenditures. To achieve this, the machine-building industry must increase the production of high-quality roller bearings for rail vehicles.

In order to accelerate the handling of mixed cargo and to reduce the amount of heavy manual work, it will be necessary to manufacture a large number of standardized corrosion-resistant and hermetically sealed small, medium, and large containers. In order to avoid large investments for warehouses, it will be necessary to manufacture fork lifts with a capacity of 700 to 1,000 kiloponds, while having only a small weight (axle load).

Machines such as 20-ton mixed-gravel machines, concrete and asphalt surfacing machines with variable widths, equipment for earthwork and compacting, semi-automatic 500- and 1,000-ton concrete mixers, all ready for series production, must be manufactured and supplied in sufficient number for the construction and maintenance of roads.

The construction-materials industry must fully satisfy the needs as to quality and type of materials, especially stones, gravel, and cement. At the same time, the material basis for road construction must be extended by a more intensive exploitation of local reserves. The Automobile Manufacturing VEB must extend the manufacture of special rigs and must ensure the supply of loading cranes and loading ramps, according to plan.

The nationalized car-construction industry must speed up the development and production of new large-profile subway traction and trailer cars of large-capacity, four-axle traction, and trailer streetcars, as well as six-axle articulated streetcars. The accelerated development and supply of electrical engineering equipment must be demanded of the Henningsdorf LEW [not identified].

Foreign trade must make sure that motor transportation is supplied, according to plan, with 150- and 170-horsepower prime movers for the transportation of construction material and heavy loads on roads.

The industry must take up the development and manufacture of technical equipment for the maintenance and servicing of motor vehicles and spare parts, establishing at the same time the respective areas of responsibility in accordance with the increasing motorization during the Seven-Year Plan.

The ship-building industry must provide sufficient docks and repair capacities and must equip seagoing ships with modern hydraulic handling equipment and deck gear.

Large enterprises must be requested to include in their reconstruction plans provisions for the modernization and extension of their warehouse, storage, and handling installations and facilities, as well as nationalized port installations for the handling of bulk material, in accordance with the newest technical standards and in cooperation with the transportation media, for the complex rationalization of all internal and inter-enterprise transportation and in the interests of the entire national economy.

All workers, employees, engineers, scientists, and officials in the enterprises, services, schools, and administration of the transportation industry are called upon to apply their

knowledge, experience, and capabilities in such a way that the modern socialist transportation industry in the GDR will continuously prove its superiority over that of West Germany and make an honorable contribution to the victory of socialism in our republic.

Photo Captions

[Page 4]: All transportation services have the duty to help socialist agriculture.

[Page 9, top]: Higher speeds, safety, and the use of new spacious streetcars presuppose maximum improvement of the network of tracks.

[Page 9, bottom]: The lying time must be considerably reduced by notifying, in due time, the arrival incoming ships.

2141

EAST GERMANY

Production and Processing of Ethylene and Propylene

[This is a translation of excerpts from an article by Eberhard Richter in Chemische Technik, Vol XII, No 2, February 1960, Berlin, pages 49-54; CSO: 3845-N/a]

The chemical program of the German Democratic Republic places the accelerated expansion of the production of plastics and synthetic fibers in the center of the further development of the chemical industry. By 1965 production [of plastics] will amount to about 250 percent and that of synthetic fibers to 4.6 times the 1960 level. Parallel with the development of the end products, we must assure the necessary supply of raw materials and basic and intermediate products. The fulfillment of the tasks for the rapid increase in the production of PVC, polystyrol, polyvinyl-acetate, polyethylene, polyamide, polyacrylnitril, and polyester fibers depends on the availability of the preliminary products necessary for these fibers in the correct amounts and in accordance with production schedules.

An essential characteristic of the planned development of the chemical industry within the framework of the Seven-Year Plan up to 1965 is the change-over in large-scale organic chemistry, which will take place partly during this period, to a new raw materials base. The carbide and/or coal chemical base, so far exclusively applied in the production of high polymer products in the GDR chemical industry, will be supplemented in the coming years to an ever-increasing degree by the production of organic raw materials on a petroleum chemical base. The required conditions for this will be created by the delivery of Soviet petroleum in significant amounts. Thus, for example, the flow capacity of petroleum processing plants will be increased from the present approximate 1.4 million tons to about 6 million tons by 1965. The amount of chemical raw materials extracted from petroleum besides the rapid increase in fuel production will constantly increase. This will apply, among other things, to the production of low-molecular, gaseous olefins, which are important raw products of plastics and chemical fiber production.

The structural change in the raw material bases of the organic-synthetics industry poses the problem of the economy of the applied processes and the processes to be introduced in the future. The planned application of petroleum chemical production processes is based decisively on the superior economy of these processes as compared to those used so far. For example, the resolving of the production of ethylene from a carbide base by cracked ethylene of petroleum chemical origin is indispensable for profitable large-scale production. This does not mean that carbide chemistry will lose its significance. Now, as before, there are products produced by methods utilizing carbide-acetylene which cannot be obtained economically by any other methods. This applies, for example, to methods used in the Buna VEB Chemical Plant for the production of PVC.

The task therefore consists in undertaking a development of the petrochemical and carbide and/or coal-chemistry industries which are ajusted with each other in regard to the available raw material and power situation in the GDR. The criterion for the preference of one or the other raw material base and/or one or the other process is the superiority of profitability for the national economy. The development of petrochemistry and securing the maximum utilization of its advantages constitutes responsible assignments for chemists and engineers of enterprises, institutes, and planning organs. At the same time, however, economists have the job of creating the correct foundations for decisions through exact economy research on the national economic and enterprise level.

Status of Development and Long-Range Plans for the Extraction and Processing of Ethylene and Propylene in the Chemical Industry in the GDR

The production of ethylene from residual gases of fuel production took place in the chemical industry in the present area of the GDR for the first time at the Leuna Works. The large-scale production of fuels started at the Leuna Works in 1927 according to the Bergius process. There gases were obtained in various production sections (semisolid phase-carbon granule chamger, gas phase-high pressure plant, gasoline skimming tanks, depropanizing, etc.), which were composed of gas benzine, hydrocarbons with one to four carbon atoms, hydrogen sulfide, and small amounts of hydrogen, nitrogen, and

carbon monoxide. The separation of the hydrocarbons into ethane, propane, and butane took place after desulphrization, elimination of the gas benzine, and removal of the ammonia. This was carried out by two Linde units installed in 1935. An additional larger separating unit went into operation in 1937.

The ethane produced by this method was burned into ethylene with pure oxygen. It was isolated in return with the help of a Linde unit. In 1938 a large cracking installation, which operated according to the oxygen-vacuum process, was put into operation. The ethylene produced was polymerized at the Leuna Works into lubricating oil and/or partly delivered to the Buna Works. In mid-1937 the production of synthetic lubricating oils was undertaken in a small testing plant (30 tons per month), was started [on a large scale] in a large plant in 1938, and reached 750 tons per month by the spring of 1944. The required amounts of ethylene were extracted by the process described. A monthly production of 1,100 tons of ethylene resulted at an ethylene consumption of about 1.5 tons per ton of synthetic lubricating oil.

At the present time about 33,700 tons of ethylene are being produced in the chemical industry of the GDR. The producers are the "Walter Ulbricht" VEB Leuna Works, and the Buna VEB Chemical Works. The total production is as follows according to the various processes (in tons):

Ethane cracking (Leuna Works)	4,700
Hydrogenated ethylene (Buna Works)	25,500
Ethylene alcohol (Buna Works)	3,500

The process for producing hydrogenated ethylene as it is applied in the Buna Works operates in principle so that carbide-acetylene is reduced to ethylene by hydrogen in the presence of a catalyst. The end gas is compressed and decomposed according to the Linde process. The process is very uneconomical and is in general inferior to the process originating from ethyl alcohol.

The ethanol yielded in the production of synthetic rubber in the Buna Plant is partially processed into ethylene in a small installation. The separation of water from ethanol during the formation of ethylene does not present any technical difficulties. The alcohol is conducted in vapor form over appropriate catalysts which effect the dehydration reaction. In countries which have at their disposal alcohol

surpluses and/or a sufficient raw material base for fermentation alcohol (molasses, sulphite waste liquors, potatoes, etc.), the production of ethylene alcohol is quite possible under economical conditions. It is of interest in this connection that even in the USA, which has at its disposal ethylene in sufficient amounts obtained from gases in the refining of petroleun, approximately 15,000 tons of ethylene alcohol were produced in 1955. What is needed for the GDR situation is a thorough re-examination concerning to what extent a further increase in the production of ethylene alcohol would be economically advisable. Already known is the fact that there are at the present time considerable difficulties in regard to the sales of ethyl alcohol and that on the other hand the output of molasses from sugar beet processing permits an increase in production throughout.

The amounts of ethylene produced in the GDR chemical industry go at the present time into three large products. These are synthetic lubricating oil, which is produced in Buna and the Leuna Plants; styrol for the production of styrol rubber and polystyrol; and ethylene oxide, which serves as an intermediate product for the production of glycols, washing raw materials, solvents, softeners, emulsifiers, basic materials for medicine, etc. Ethylene glycol again finds application as a frost protection substance, and for the production of cellophane, polyester fibers, alkyd resins, etc. The following consumption structure results approximately for individual products (in tons):

Synthetic lubricating oils	12,000
Ethylene benzol	9,400
Ethylene oxide	11,600
Others	700

The further requirement development for ethylene is determined first of all by the planned large-scale production of polyethylene within the framework of the chemical program. An increase in production to 50,000 tons is planned by 1965. In 1963, 30,000 tons of polyethylene are to be produced by the high- and low-pressure process. A considerable gap in the present plastics production program will thereby be closed. Polyethylene production alone requires that by 1965 about 55,000 tons of ethylene be available. The production of polystyrol is to amount to 20,000 tons by 1965; a production amount of 105,000 tons is planned for synthetic rubber; and the volume of products depending on ethylene oxide will also increase. Altogether, the ethylene requirement for 1965 will reach and exceed the 100,000-ton limit.

A similar development will take place in regard to the requirements for propylene. Taking up the production of synthetic phenol on the road to cumol separation is a prerequisite for the extraction of the amounts of propylene necessary for the alkylization of benzol into cumol. In this connection, we must not forget the production of polypropylene, which in regard to future long-range plans is an assignment of the plastics-producing enterprises.

The rapid increase in needs for ethylene and propylene requires clarification of the problem as to which road and which economic production process can guarantee that these needs will be met. For this purpose, the available raw material possibilities and the most favorable process and time considerations in regard to expansion stages are to be thoroughly studied. Production processes which have proved to be suitable for other countries have proved unsuitable for the GDR after examining all standpoints. For example, the largest part of the olefins needed as raw products for large-scale organic chemistry in the USA are extracted there from gases obtained in petroleum refining; however, this method still remains closed to the GDR chemical industry. The present and planned scope of petroleum processing for 1965 do not reach the level required for meeting the requirements in gaseous olefins alone from these yield sources. The need for olefins is increasing much more rapidly than the yield of olefins from refining gases.

The situation compels us to erect special installations whose chief purpose is the production of gaseous olefins. What are the opportunities for increasing production and which processes are to be applied?

The first possibility is the expansion of the ethane separation installations in the Leuna Works. By setting up additional separating furnaces and the required gas decomposition installation, the production can be doubled in comparison to the present level. Here also we can use propane, which is preferably used for separation into ethylene, in the appropriate installations. The expansion of ethylene production on this basis depends on how much propane is needed in the future for fuel gas and household purposes.

The most important measure in meeting this requirement for gaseous olefins is the erection of pyrolysis installations for the cracking of light petroleum fractions. Only by this

method is the production of the required large amounts of ethylene and propylene possible under favorable economic conditions. In past years a number of technological processes have been worked out which have as their goal the direct production of gaseous olefins through cracking at high temperatures. The development in this area is by no means closed, so that the selection of the most advantageous processes presents difficulties. The considerations of maximum olefin extraction on the hand and the simultaneous extraction and reconditioning of residues rich in aromatics on the other hand play an essential role.

We can basically differentiate two types of methods in the pyrolysis of light petroleum fractions. On the one hand, we are concerned with methods which, in addition to maximum olefin amounts, supply a residue which contains aromatics that can be reconditioned into high anti-knock gasolines, but which, in regard to the concentration of aromatics permits no isolation of the aromatics under economic conditions. On the other hand, processes are known whose reaction conditions, in addition to olefin formation, produce a completely aromatized residue from which the desired aromatics can be extracted, In this second group of processes, a decreased olefin yield must be taken into account.

A process of the first group is the Kellogg process developed in England. Superheated steam serves as a heat carrier in this process. The disadvantage of this is the extraordinarily high steam requirement and the necessary high temperatures, which compel the use of high-alloy construction materials. Up to 32 percent by weight (Gew. %) of ethylene is extractable when using heavy benzine as a charging material. Of advantage is the low amount of paraffin hydrocarbons in the same C-count areas of the olefins to be extracted. The ratio of the olefin and paraffin portions in the individual C-count areas is an important technical factor which must be taken into consideration in regatd to the economy of the process. A higher olefin amount requires a smaller expenditure in cracking work and thereby decreases the cost of production. Another advantage of the Kellogg process is the fact that the danger of coke formation does not exist and therefore a decrease in operating costs takes place from this standpoint as compared to other processes.

A process of the second group is the Lurgi-Ruhr gas process. Circulating sand is used here as a heat carrier. This causes a high incidence of installation breakdowns

through corrosion damage and/or investment costs are increased by the necessity of using the highest quality steels. By introducing light benzine, the cracked products contain, in maintaining the optimum reaction conditions, for example, 33.7 percent ethylene (3.4 percent ethane) and 14.5 percent propylene (0.7 percent propane).

The requisitioning of the aromatized residues of the cracking installations for the extraction of benzol and xylols is, under the raw material conditions of the GDR, an essential factor for the selection of the process to be used. The present need for benzol for the production of synthetic phenol and the expansion of styrol production, as well as the extraction of the required xylols for the production of raw products for polyester fibers, presupposes the discovery of domestic sources of aromatics. As the GDR does not have any mentionable coal resources, extraction must be undertaken on a petroleum chemical basis with the requisitioning of all raw products concerned.

Crude benzine from distillative petroleum processing is suitable as a charge product for the cracking installations. About 260,000 tons of crude benzine would be required for an output of 100,000 tons of ethylene. An opportunity arises in the compound production of propulsion fuels in this respect to find a sensible application oor low-value benzines. Distillate gasolines with a basic octane count of under 50 will be used for cracking operations in pyrolysis installations.

The erection of special cracking installations for the extraction of gaseous olefins offers the possibility of decreasing step by step or completely stopping the production of hydrogenated ethylene, which is presently being carried out on a wide scale. The highly developed carbide chemistry in the GDR, which originated on the basis of cheap power, and the complete lack of a mentionable petroleum processing formed in the past the foundation for the building up of an ethylene production on the basis of acetylene hydrogenation. Today the need for further expansion or for the maintenance of this production process no longer exists. Thanks to the close bonds of cooperation with the socialist countries joined together in the Council for Mutual Economic Aid, all conditions have been laid down to supply the GDR with the required amounts of petroleum. By 1965 the petroleum imports from the Soviet Union will increase from the present 1.4 million tons to 4.8 million tons. Favorable conditions for the transport of petroleum will be created by the construction of oil lines.

It is known that a number of chemical basic and intermediate products can be essentially and advantageously produced more rationally and economically from a petroleum base than from a coal and/or carbide base. It was indicated at the first German Chemical Conference on 3 and 4 November 1958 in Leuna that a petroleum processing of about 6 million tons is necessary for the planned development of the plastics and chemical fibers production and/or for the required preliminary products and for the motor fuel production planned for 1965. Were the same amount of organic raw materials and propellants to be produced with a brown coal base, a supply of 90 million tons of raw coal, the processing of this raw coal to 45 million tons of briquettes, and the low-temperature carbonization of these briquettes into corresponding amounts of tar would be required. Investments amounting to 12 billion DM would be necessary for these measures alone. Such a sum exceeds the planned fund expenditures for the chemical program for all branches of the chemical industry.

Lets make a rough estimate of the investment funds required for the production of 20,000 tons of ethylene, first as cracked ethylene and then as hydrogenated ethylene. For the production of one ton of hydrogenated ethylene, approximately 3.7 tons of carbide are needed--i.e., about 75,000 tons of carbide for 20,000 tons of ethylene. This corresponds to the annual production of one carbide furnace in the Buna Plant. One unit of the benzine cracking installations which operate by the Lurgi-Ruhr gas process, for example, allows about the same amount of ethylene production. We must also take note that propylene, as well as other gases and residues containing aromatics, are yielded.

The production of a carbide furnace requires the expenditure of funds amounting to approximately 40 million DM. In addition, there are investments for the extraction of lime, the production of burnt lime, carbide gasification into acetylene, and the hydrogenation of the acetylene. Including these expenditures, we can count on a total expenditure of about 75 million DM. Compared to this, the investment requirements for a cracking installation of the mentioned size arrangement, including the gas separating unit belonging to it, amounts to no more than 20 million DM.

The advantages of cracked ethylene as compared to hydrogenated ethylene, which appear in a comparison of the installation costs, become still more clear in a comparison of the production costs. The production of hydrogenated ethylene is

bound up with extraordinarily high power costs brought about by the carbide process. Compared to this, the power requirements connected with benzine cracking are comparatively very small. The production of hydrogenated ethylene runs--when one proceeds from the extractively obtained raw material--through several stages and requires broad transport operations. An unfavorable balance in regard to power results, for example, when the valuable triple bonding of the acetylene is carried over into the double bonding of the ethylene. The raw materials derived from benzine cracking are comparatively easy to transport; the reactions take place at essentially lower temperatures than is the case in the carbide furnaces; and finally, no additional hydrogen production is required.

The clearly economical superiority of producing gaseous olefins by high-temperature cracking of crude benzines as compared to the processes used mainly so far, and the greatly increasing need for ethylene and propylene by the expansion of plastics and chemical fibers production, lead to the decision to erect within the framework of the chemical program these types of cracking installations with a capacity of about 100,000 tons of ethylene.

These production amounts would not only cover the increasing needs but also permit at the same time the solution to the uneconomical production of hydrogenated ethylene.

Of essential significance for the economy of a new installation is the correct determination of its location, while considering all the production processes concerned or the location factors perculiar to the product concerned. The most important location factor for ethylene production and the production of gaseous olefins in general are the difficulties in transporting light gases over great distances. This type of transport requires additional expenditures for the compression of the gases add the use of high-pressure containers, and thereby lead to excessive transport costs. For these reasons each large-scale technical production of ethylene is connected with the location of the consumer. Long distance gas lines over several kilometers are thereby completely possible.

The "Walter Ulbricht" Leuna Plant has proved to be the most favorable location for the erection of the cracking installation. In the first place, the Leuna Plant itself is the largest consumer of ethylene by way of the planned production of polyethylene, and in the second place it is the only

consumer of the propylene yielded for the production of synthetic phenol. The yielded residual gases can be advantageously used in the expanded gas economy of the enterprise. The aromatics-containing residue of the pyrolysis units can be delivered to plants undertaking the extraction of aromatics by means of tank cars. The second ethylene consumer in the GDR chemical industry is the Buna Plant, which needs the gas for polyethylene production and also for the production of ethylene oxide and ethylene benzol. In the long-range plan, the Buna Plant will be supplied by the Leuna Plant over an ethylene pipeline. Also of interest in connection with covering the ethylene needs of the Buna Plant is the possibility of isolating ethylene benzol directly from the residues of the cracking installations and other primary sources of aromatics and of using it for styrol production.

The erection of a benzine cracking installation in the "Walter Ulbricht" Plant for the production of ethylene and propylene is a principal condition for the introduction of petroleum chemistry in the chemical industry of the GDR. So far only unsatisfactory experience has been obtained in enterprises in this modern branch of production of the chemical industry with its many-sided and economically advantageous possibilities. Therefore, the short-term planning, the construction, and the timely putting into operation of the new installations presented all participants with difficult problems. The significance of the cracking installations in carrying out the chemical program is quite apparent. Starting the installations according to the planned schedules is not only a condition for the large-scale technical production of polyethylenes, but it is at the same time a prerequisite for taking up the production of synthetic phenol, which is needed for the production of caprolactam and for putting into operation the polyamide silk section of the Guben Chemical Fibers Combine. The "ethylene carbonization plant in Leuna" is one of the key projects of the chemical program, and it therefore requires the concentration of personnel and cooperative socialist work on the part of the chemists, engineers, and workers from the designing offices, construction enterprises, and machine-building and chemical enterprises in guaranteeing good preparations and planned production.

In the long-range planning beyond the period of the Seven-Year Plan, the construction of additional special cracking installations for the production of gaseous olefins will not be necessary at first. By this time, the refining gases of the Schwedt Petroleum Refining Plant will be available on a

large scale. The capacity of the plant will amount to 4 million tons per year of refined petroleum in 1965 and will double in the final construction phase. The gas yield, especially of olefins, depends on several factors for its order of magnitude--first of all on the technology selected for the plant, and beyond this on the composition of the petroleum to be processed and other processing conditions. The largest gas yield appears in the cracking installations. In the operation of a catalytic cracking installations, 140,000 to 160,000 tons of gas will be yielded which will contain approximately 10,000 tons of ethylene (mean value of the different variants) in the processing of two million tons of petroleum (accepting 700,000 tons of charge product for the cracking installations); this is a rough estimate. An olefin yield in reference to the order of magnitude of the final construction of the plant will make possible an economical separation of the gas. The long-range plan for oleifn extraction in Schwedt is connected with the further processing into certain intermediate products, such as products depending on ethylene oxide.

1907

EAST GERMANY

Tasks of the East German Mining and Metallurgical Industry in the Realization of the Seven-Year Plan

[This is a translation of an article by Kurt Gregor in Neue Huette, Vol V, No 1, January 1960, East Berlin, pages 3-5; CSO: 3849-N/a]

A few figures are given below to illustrate the positive development in mining and metallurgy:

Compared with a pig iron output of 202,000 tons in 1936, the output in 1959 came to 1,930,000 tons. This represents an increase of 9.5 times in the output of pig iron.

A similar development may be observed in the output of crude steel. In 1936 the annual output came to 1.2 million tons, while about 3.2 million tons were produced by us in 1959.

In potash, 953,000 tons were mined in 1936, while in 1959 the output will probably be 1.5 million tons.

The mining of copper ore rose to 130 percent compared with 1936.

After this review, the logical question arises as to what the development of mining and metallurgy of our republic will be in the future.

The law (Gesetz) concerning the Seven-Year Plan for the development of the economy of the GDR in 1959-1965, passed on 1 October 1959 by the People's Chamber, lays down the following provisions, among others:

"The main task of the Seven-Year Plan is, by means of a rapid attainment of the highest scientific and technological standards, to raise labor productivity and output to a maximum extent, in all the branches of the national economy, along with a continuous reduction in cost, in order to create the material and technological basis for the victory of socialism and to satisfy to an ever greater extent the growing needs of the people.

"Through the attainment of the high goals of the Seven-Year Plan, a profound revolution in the social and cultural life will take place in the GDR, which will lead to a full development of socialist life and of the personality of socialist man. Because of this, the GDR is becoming a more and more attractive model for the working class and for the entire population of West Germany."

In order to achieve these revolutionary tasks, the industrial gross output in the GDR will climb to 188 percent by 1965 compared with 1958 and will thus reach a total volume of more than 110 billion DM by 1965.

Labor productivity in the people-owned industry is scheduled to rise to 185 percent within the next seven years. This means that most of the enterprises--with the same or a smaller number of workers--must double their output within seven years.

The rise in labor productivity must therefore be based on the highest level of science and technology. To this end, we shall invest 60 billion DM in industry within the next seven years. Investments during the past seven years came to 24 billion DM. With such a development we shall surpass West Germany in labor productivity.

In the course of this development we shall also realize our principal economic tasks and surpass West Germany in the per-capita consumption of all foods, luxuries, and industrial consumer goods, and shall thereby prove the over-all superiority of our socialist social order.

Metallurgy, potash mining, and geological exploration are confronting major tasks in the Seven-Year Plan.

In order to ensure a mounting production of machines, electrical equipment, and construction, and for a successful realization of the chemical program, the metallurgical industry must raise its total output by 75 percent compared with 1958.

In 1965 the following quantities will be produced:

2.1 million tons of pig iron
4.6 million tons of crude steel
4.3 million tons of rolled steel

In 1965 we shall have at our disposal, from our own output and from imports, 6.5 million tons of rolled steel, whereas in 1958 we had only 3.7 million tons.

We do not plan to construct new blast-furnace plants during the Seven-Year Plan, because we are very dependent on imports of raw materials in the output of pig iron. Our growing pig iron requirements are being covered especially by steeply rising imports from the Soviet Union.

The planned 21-percent increase in pig iron output in the GDR must be accomplished through an expansion in useful furnace space, through thin-walled heat transmission, and through the application of an automatic (selbstgaengigen) agglomerate, as well as through the completion of automation of all the blast furnaces in the "J. W. Stalin" VEB Metallurgical Combine (Eisenhüettenkombinat). By 1965 the efficiency is to be raised from 1.3 to 1.129 cubic meters per ton per day.

The attainment of the highest standards by our machine-tool industry is required by the metallurgical industry in order to meet the demand for a much larger output of high-grade and high-quality steels. This determines the emphasis of the entire future development of our metallurgical output.

These are the reasons why the output of high-grade and high-quality steels must be increased to at least 2.5 times the 1958 volume, with the output of rustproof and heatproof steels to be increased tenfold, and that of heat-resistant steels to be increased fivefold.

In this connection, the preferential production development in the second stage of manufacture should also be mentioned. While the output of rolled steel is to be increased to 152 percent within the next seven years, an increase to 311 percent is planned for products of the second stage of manufacture.

The fundamental tendency in the development of our ferrous metal industry may be stated as follows:

Concentration on the production of products of highest quality, and predominance of imports of low qualities.

This means increased economic benefits for our national economy.

In the nonferrous metal industry, the main task is to improve the utilization of ores and other metallic raw materials and substantially refine our mill and rolling mill products.

The output of copper is to be increased 40 percent by means of reconstruction measures in the "Wilhelm Pieck" Mansfeld-Metallurgical Combine. Here, the output of oxygen-free copper for the electrical engineering industry is to be increased fifteenfold.

In the course of the Seven-Year Plan, the structure of our application of raw materials will switch substantially toward an intensified use of light metals.

In this connection it is interesting to note that, in the application of heavy and light metals in machine-building, conditions now favor light metals.

While the output of the metalworking industry is to increase to 217 percent in the Seven-Year Plan, the consumption of rolled steel in machine-building will increase to only 166 percent. On the other hand, the output of aluminum is to increase to 218 percent and the consumption of plastic materials to 350 percent.

Because of this, the consumption of rolled steel in machine tool construction will drop from 129 tons per million DM of output in 1958 to 96.5 tons in 1965. While in 1960 one ton of heavy metal is consumed for every 480 kilograms of light metal, the latter figure will rise to 600 kilograms by 1965.

The output of potash products is to rise to 139 percent. This, however, presupposes that the methods of mining and hauling in our potash mines and the processing into high-quality potash products will be fundamentally improved. Through the use of high-frequency drills and the adoption of firing with milli-second fuses, the effective tonnage in mining will increase by 2.3 tons per man-hour by 1965.

The GDR occupies third place in the world in the mining and processing of potash, and first place in exports of potash products.

The great tasks toward an increase in output, an improvement in quality, and the introduction of the latest technological methods cannot be solved by single individuals alone but require the efforts of the entire collective in our plants, research establishments, and administration.

Our intellectuals will have to solve these problems in the spirit of socialist partnership in industry as well as in research and development, so as to be able to achieve the great goals of the Seven-Year Plan.

The principle of socialist cooperation must also serve as principle for the Society of German Mining and Metallurgical Workers.

In the past, insufficient attention has been paid to the very valuable assistance that can be rendered by the members of the intelligentsia composing the work groups and research associations of the Society of German Mining and Metallurgical Workers. Here we may add a few recommendations for socialist cooperation within the framework of this society.

The law on the Seven-Year Plan requires that about 4.8 billion DM be invested in the iron and steel and nonferrous metal industries, and about 800 million DM be invested for the development of the potash industry. The most important and largest investment project of the ferrous metal industry is the construction of a modern steel and rolling mill within the "J.W. Stalin" Metallurgical Combine.

No entirely new plants will be constructed during the period of the Seven-Year Plan. New investments will be carried out only within the framework of reconstruction and expansion of existing plants. In this connection, labor productivity in the ferrous metal industry is to be increased 61 percent by 1965, and as much as 72 percent in the nonferrous metal industry.

In carrying out the reconstruction measures, the utilization of the existing finishing roll trains is to be increased by 50 percent.

In this connection, numerous problems in the fields of standardization, specialization, and cooperation as well as mechanization and automation are to be clarified and solved. These great tasks cannot be solved quickly and comprehensively by the VVB's and their enterprises alone. Here the assistance of the Society of German Mining and Metallurgical Workers must be employed. The aim should be that for the Society to assist and cooperate in the planning, preparation, and execution of all the important reconstruction measures by offering expert opinions and recommendations as well as by

actively assisting in the practical creation and realization of the projects. This requires useful coordination of the work of the VVB's on the one hand, and the Society of German Mining and Metallurgical Workers on the other hand.

Another field in which this society has to fulfill important tasks is the development of young cadres recruited by the enterprises from the technical schools and higher educational institutions of our republic. It has been demonstrated time and again that the graduates frequently experience great difficulties during the period of transition from school to practice. Advice to the graduates given by experienced specialists who are members of the Society and the employment of the graduates in practical work within the work groups of the Society will make it possible to intensify the training of our young intellectuals and to more rapidly integrate them into the creative work process.

I very much approve of the practices of the Society of German Mining and Metallurgical Workers engaged in during the last few years, of conducting conferences of graduates at the main annual sessions and general meetins of specialists, since they make it possible to become acquainted with the troubles and tribulations of our graduates on a large scale and to devise measures for improvements in this respect.

In order to carry out the development of mining and metallurgy on the basis of the highest scientific and technological level, technical and scientific cooperation with other countries is also called for.

Moreover, the Society of German Mining and Metallurgical Workers should improve its effectiveness in this respect. We recommend especially that the sharing of experiences be intensified with the technological and scientific societies of the socialist camp--for example, with the Scientific-Technological Metallurgical Society of the Soviet Union or with the Czechoslovak Scientific-Technological Society for the Metallurgical and Foundry Industry--to mention but two. In this manner, the rapid paced development that is taking place in all the socialist countries, which ensures that socialism will be victorious in its peaceful competition with capitalism, will also be advanced.

1985

EAST GERMANY

The Demands of the Chemical Industry Program on the East German Mining and Metallurgical Industry

[This is a translation of an abridged version of a report by Wolfgang Schirmer to the General Annual Meeting of the GDBH on 26 October 1959 in Leipzig, published in Neue Huette, Vol V, No 1, January 1960, East Berlin, pages 6-11; CSO: 3849-N/b]

1. Tasks of the Chemical Industry Within the Framework of the Seven-Year Plan

1. The Significance of the Chemical Industry for Our National Economy

Measured by the value of output, the chemical industry occupies second place among the industrial branches of our economy. In 1958 we were responsible for 14.5 percent of the total industrial output.

In per-capita output, the GDR is second only to the United States.

Chemistry permits a high concentration of production. The matter transformation processes are mostly carried out in a continuous process and in large aggregates or plants.

The chemical industry is actually a part of the basic raw material industry, but its products penetrate deeply into the consumer-goods industry, and it may even be said that there is hardly an industrial branch today that is not directly concerned in chemical products and dependent on the development of the chemical industry.

The chemical program devised a year ago carries the slogan: "Chemistry provides bread, wealth, and beauty."

If our agriculture has succeeded within the last 50 years in increasing the average grain yield per hectares from 12 to 13 up to 26 hundred weight, the chemical industry had a decisive share in this development through providing agriculture with mineral fertilizers.

The activities of the chemical industry are marked by large-scale use of mechanized and automated working processes. The average labor productivity of a chemical industry worker is much above that of the national economy as a whole.

The chemical industry regards the above slogan as the aim of its entire work and thus to contributed its share to the Seven-Year Plan.

In realizing the latter we shall demonstrate to the entire German nation that in that one third of Germany, in which industry has passed into the ownership of the people, the chemical industry too serves only peaceful aims. We are thus creating an exsmple for all of Germany which demonstrates that the socialist social order, despite many objective difficulties, serves the interests of the workers better than the capitalist system. In the competition between the two different social orders in Germany, the chemical industry will play an important part. Our chemical economy will have to carry the main burden in the solution of the principal economic task by 1961.

The chemical industry makes great demands on machines and units of machines, on electric power supply, and on the metallurgical industry, and the chemical program decided upon now has thus been rightfully characterized as a model of the over-all complex development of a branch of industry within the entire national economy.

2. What Are the Interrelations that Become Apparent Between the Chemical and Metallurgical Industries?

Metallurgical processes, as typical matter-transforming processes, fall essentially into the category of the chemical industry. The fact that the reduction of iron oxide to iron and other metal producing and refining processes are listed as a separate branch of industry is primarily due to historical rather than technical-economic causes. According to their scientific elements, as well as their work processes and applied technological processes, there is a large-scale similarity between the chemical and metallurgical industries.

Mainly, the chemical industry is a consumer of metallurgical products, and in this capacity it has a large-scale program of demands and requirements. Our requirements from the metallurgical industry extend all the way from supplies of

cast iron and plain structural steels, alloyed, and high-quality steels to supplies of nonferrous and precious metals.

We are not concerned only with the common metals or the above-mentioned alloys. Of importance to us are, in the first place, the forms in which the basic materials are offered to us, and production in the second stage of manufacture.

The chemical industry, however, also plays a role as a supplier of raw materials for the metallurgical industry. We have to take care of and provide for supplies of heating gas and fuels, of additives for the production of iron, of materials for surface protection and for the production of pig iron. Thus, there is a system of close kinship between our brnnches of industry. Direct cooperation is therefore advantageous and beneficial to both parties. It should be cultivated more intensely than heretofore, not only between centers of scientific woek but also between the plants and their administrations.

3. Special Tasks for Certain Chemical Products

The chemical industry as a whole is slated to increase its gross output by 33 percent by 1961 compared with 1958. an increase of 64 percent is envisaged from 1961 to 1965. Thus a doubling of the volume of production over that of 1958 is projected in the course of the Seven-Year Plan. The annual output growth is calculated to be between 11 and 12 percent.

a) Nitrogen

The output of ammonia will increase from 370,000 tons of nitrogen (N) in 1959 to 450,000 tons in 1965. The increase in the nitrogen output will be essentially accomplished by way of a systematic reconstruction of the Leuna Ammonia Plant. The acquisition of high-pressure coatings for a working pressure of at least 325 atmospheres and the use of the well-known hydrogen pressure-resistant steels are required for the expansion of these plants. The increase in the output of fertilizers will be accomplished, in the first place, by means of an increase in the nitrate fertilizer output. A variety of metallurgical problems, especially the preparation of alloys and of pure aluminum for installations for the absorption of nitric gases, arise in connection with the expansion of the nitric acid installations.

b) Sulfuric Acid in Tons of SO_3

The output of sulfuric acid will increase from 573,000 tons of SO_3 in 1959 to 1,040,000 tons SO_3 in 1965.

The expansion of the sulfuric acid output--of utmost importance to the entire national economy--is to be accomplished mainly by expanding the installations for the output of sulfuric acid from anhydrite. With this are connected the well-known metallurgical problems that showed up when gypsum sulfuric acid production was started in the Wolfen Paint Plant.

c) Soda Lye and Chlorine (Electrolytic Production)

The production of soda lye and cholorine, which are closely linked via the electrolytic process, is slated to increase to 165 percent by 1965 compared with 1959.

For the expansion of the electrolysis process, we are dependent on the importation of unalloyed lye-resistant steels in the form of seamless pips and boiler plate. According to a notification received from the Bitterfeld Electrochemical Combine, there is no inclination in the GDR at the present time to engage in the output of this type of product.

Finally, in 1965, a plant for the output of chlorine from magnesium chloride is to start production. Special reference may be made in this connection to the problems that arise with regard to the manufacture or obtaining of chlorine-hydrogen-resistant and chlorine-resistant steels.

d) Calcium Carbide (Normal Carbide)

The output of calcium carbide will increase from 897,000 tons in 1958 to 1,180,000 tons in 1965.

Considerable new construction is being undertaken for the development of this output in the Schkopau Buna Plant and in the Piesteritz Nitrogen Plant. The units that are being installed in Schkopau will be among the most up-to-date carbide kilns in the world. For the manufacture of feeder heads in the carbide drums, certain quantities of special carbon-poor iron, which is being smelted now by our metallurgical industry, must also be made available. The expansion of the carbide

plants is connected with large requirements for copper, high-quality steel sheets for transformers, and other metallurgical products.

e) Phosphorus

The output of phosphorus in the Piesteritz Nitrogen Plant will increase 2.4 times.

The output of phosphate fertilizer, including Thomas meal, will increase from 138,000 tons of P_2O_5 to 283,000 tons of P_2O_5--i.e., it will more than double.

For expansion and repair of the phosphorus extraction plant, special alloys, bronzes, and heat-resistant steels must be readied.

f) Gasoline and Diesel Fuel

The output will increase from 2,200,000 tons in 1959 to 4,050,000 tons in 1965.

Production will take place exclusively in existing plants up to 1962, especially in Leuna and Boehlen, while the Schwedt Petroleum Refinery will start production in 1963.

The large-scale expansion of our fuel output is being ensured, as is known, by long-term trade agreements with the Soviet Union and by supplies of Soviet petroleum that are being received by our national economy.

In our petrochemical installations, we shall pass gradually from plain structural steels to the use of alloyed structural materials.

g) Ethylene

Among the very important raw materials for the entire synthetic textile and synthetic fiber industry are gaseous olefins and paraffins, and especially ethylene, which is utilized for the production of polyethylene, styrolene, ethylene-oxide, and other important intermediary products and solvents. Its output in Leuna is slated to increase from 5,700 tons in 1960 to 100,000 tons in 1965.

h) Synthetic Materials

A particularly pronounced expansion will take place in the output of the following synthetic materials: polyethylene (planned productive capacity for 1965--50,000 tons), caprolactam (planned productive capacity for 1965--23,000 tons), ploy vinuchloride (increase in productive capacity in 1965 to 225 percent of that of 1959), and polystyrolene (fivefold increase of productive capacity by 1965).

While today we have an output of synthetic materials of 7 kilograms per capita, it will amount to 16 kilograms in 1965.

The output of synthetic rubber is slated to rise to 135 percent from that of 1958.

In the construction of installations for manufacturing synthetic materials, substantial amounts of alloyed raw materials are required. For instance, the share of chromium-nickel alloys for the expansion of the caprolactam installation may be estimated at about 35 percent.

For the gas cracking installation, required for the extraction of pure ethylene, about 160 tons of chromium-nickel alloys must be prepared. Since some processes take place under high pressure and at high temperatures, heat resistance and tinder resistance are among the properties required for these materials.

i) Development of Synthetic Fiber Output

Chemistry has been producing dederon fiber (perlon), well known for a long time. A new development is wool crylon fiber, and the large-scale production of lanon fiber will be undertaken in the course of the Seven-Year Plan.

The output of synthetic fibers, which came to about 0.4 kilograms per capita in 1958, will be increased approximately five times by 1965, so that we than shall have available an annual output of 2.2 kilograms per capita.

An installation in Leuna for the output of synthetic phenol according to the cumol process is to start production. Since this installation operates with strongly corrosive aluminum chloride, the metallurgical industry is confronted here by certain raw material problems.

Finally, reference should be made to the unselfish and far-reaching assistance by the Soviet Union and other allied countries, who are engaging in the struggle to develop the chemical industry jointly with us.

2. Demands of the Chemical Industry on Metallurgy

On this subject, view should be stated as they emanate from the practice of large chemical plants, without going into the details of the scientific problems of the metallurgical industry.

Of primary interest is the total volume of investments, machines, and equipment as well as the requirements for steel and nonferrous metals within the framework of the chemistry program.

1. Total Investments and Requirements for Metallic Raw Materials up to 1965

The chemical industry has about 9 billion DM at its disposal for the realization of the expansion goals of the Seven-Year Plan. After adding to this the investments for maintenance of the basic existing equipment, we arrive at about 11 billion DM. This represents approximately a 2.5-fold increase compared with the funds that were available during the Second Five-Year Plan.

The share of new equipment, including installation, should reach the figure of approximately 7 billion DM. After deducting 20 percent for assembly, it may be assumed that 5.6 billion DM will be invested for equipment proper.

Thus, this equipment must either accrue from our own machine-tool industry or be the result of imports from or cooperation with, our friends abroad. In value, this is about triple the average amount of supplies of years past.

It is very difficult to specifically assign the amount of 5.6 billion DM to the value of the metallic raw material. Therefore, one may refer only to the fact that these figures contain unit sets of the following branches of machine-building: boilers, steam turbines, machine tools, machines

for metal forming, transport equipment, steel structures, armatures, gears, pumps, and compressors.

The production of chemical apparatuses--excluding the pieces of equipment and machines mentioned so far--will double during the 1960-1965 period. More detailed requirements for these machines cannot be given, although it is possible to give data on the requirements for repair materials of the chemical industry.

The requirements for rolled steel, including cold-rolled products, will increase from 100,000 tons in 1960 to 125,000 in 1965.

The requirements for sheet metal for repairs will increase from 28,000 to 38,000 tons within the same period; the requirements for pipes from 17,000 to 27,000 tons.

The Leuna Plant alone manufactures about 30,000 tons of hot-rolled products per year.

These figures do not include metal products that are manufactured by enterprises of the machine-building industry or by other industrial branches for the chemical industry.

2. Utilization of High-Grade Steels in the Chemical Industry

For the full exploitation of the existing productive capacities of the chemical industry, it is of great importance to increase the operating time of the aggregates, reduce the repair work and the time required for repairs, and increase the potential of the aggregates in terms of output, temperature, and pressure. A reduction in repair work is especially important with respect to an increase in labor productivity. Therefore, in our reconstruction raw materials that permit a more extended time of operation of the aggregates are favored. Also, uniform quality of output is decisively influenced by the metallic raw materials of the aggregates. While in past years we had to be content with a minimum of high-quality steels and alloys, the chemical program calls for a greatly intensified use of the high-grade metals.

An approximate estimate of the present situation leads to the conclusion that in large chemical plants of Halle Bezirk the sahre of alloyed metals and high-grade steels is about 7 percent of the total weight involved.

Technologists of the petrochmeical plants of the USSR calculate today on an average of 20 to 25 percent high-grade steels in the total weight of their installations. When we inspected a large vacuum distillation column that processes 700,000 tons of petroleum per year in the Novo-Kuybyshevsk refinery, we were told that this column was made of high-grade steel. The duration of continuous operation of the distillation installation, we were told, increased from six weeks with the utilization of ordinary steel to 13 months through the use of rustproof austenitic chromium-nickel steel. Since we are interested in utilizing such a column in the Schwedt Refinery, this example proves to us the advantages of using high-grade steel.

Also, the installations planned for the expansion of the Leuna Plant will be largely constructed with rustproof chromium-nickel steel. For example, its share in the expansion of a pilot plant for the production of dimethylerephthal acid ester will be as high as 40 percent.

For the installation for the production of synthetic phenol by the cumol process, 200 tons of rustproof austenitic chromium-nickel steel will be required. The installation that is to be built in Leuna for the production of nitric acid will consist up to 80 percent of this steel.

Since the sulfuric content of the petroleum to be refined within the next few years will increase, it would be opportune to construct distillery plants for the processing of petroleum of 13-percent chromium steel or of rustproof austenitic chromium-nickel steel-plated sheets.

As examples of the advantageous use of rustproof austenitic [stainless] chromium-nickel steel the following cases in the Leuna Plant alone may be mentioned:

a) For the production of ammonium sulfate fertilizer, a slightly acid ammonium suflate lye must be vaporized. This is currently done in steamers [vaporizers] lined with lead, which must be newly leaded every six or nine months. If the lead lining is replaced austenitic high-grade steels, 500,000 DM would be saved per annum. Furthermore, the capacity of the installation would increase by approximately 18 percent. The staff could be reduced by 10 to 12 solderers.

The cost of installing chambers lined with austenitic high-grade steels can be amortized in two years.

b) For the production of phenol, the distillation of phenosolvane extracts is of great importance. The respective column was constructed in Leuna of ordinary steel. It operates in a vacuum of 12 Torr and a sump (Sumpf) temperature of 160 degrees centigrade. In the counse of one and a half years, the distillation column had to be shut off 25 times. It was deactivated in April 1959 because of heavy corrosion damage. While the steel walls were heavily corroded, the heating coils of rustproof austenitic chromium-nickel steel was fully preserved. The new column is being made of a titanium-stabilized chromium-nickel 18.1 steel. Although it costs twice as much as the old installation, the new column will be amortized in not more than two years. Furthermore, the savings in labor and the larger output will produce additional profits of 100,000 DM per annum.

The utilization of noncorroding metallic materials is very important for the output of initial products in synthetic materials, which must be of very high purity. For instance, the use of rusproof austenitic chromium-nickel steel for caprolactam extraction permits the production of a particularly pure quality which does not turn brown after protracted storage.

The requirements are similar for the production of lanon fiber.

In the production of K-glue, a urea formaldehyde condensation product, we have been utilizing enamel-lined condensation containers. Since variations in temperature occur in this process, the enamel cracks off, the K-glue comes into contract with the steel in certain places of the apparatus and turns brown. The utilization of containers electroplated with rusproof austenitic chromium-nickel steel makes it possible not only to apply high temperatures under pressure but also permits continuous processing, which results in an increased output of the entire installation.

In the heat exchangers of the methanol synthesis, pipes of a copper-manganese alloy have been utilized which have a service life of about 270 days and can be procured only with great difficulty. If one replaces these pipes with pipes made of rustproof austenitic chromium-nickel steel, the service life of these heat exchangers increases to at least three years, which means an annual saving of 160,000 DM for eight heat exchangers.

The modern, efficient processes in the production of olefins at temperatures of 800 to 850 degrees centigrade in the presence of water vapors and carbon-hydrogen vapors are feasible only when tinder-proof alloyed steels are available for this purpose.

Finally, reference should be made to the problem of urea production. Up to now, the synthesis took place in reaction containers lined with lead sheet. Thereby the urea absorbed lead of a content of 6×10^{-4} percent. These quantities of lead intervene considerably in the utilization of urea as amide fodder for milch cows; therefore, agriculture demands lead-free urea.

The production process for urea in Leuna, which had a high yield, results, however, in such high corrosion that no rustproof austenitic chromium-nickel stee. has yet been discovered which will offer satisfactory resistance. Of late, remanite HB is being recommended, but also titanium-lined sheets and pipes should suffice.

3. What Alloyed Steels Should Be Produced?

The metallurgical industry is projecting 61 types of steel, divided into five groups, for the chemical program as well as the production of electroplated pipes and sheets. In addition to this, a program is planned for the output of high-grade steels for special purposes, which are of interest to the chemical industry only in an indirect way (alloyed structural steels, tool steels, high-speed steels, and special steels). A questionnaire circulated among the large chemical plants indicated that it was possible to ascertain that the demands of the chemical industry for new metals are diverse and comparatively modest. In any case, they are much easier to fill than the demands of the aircraft industry or of nuclear technology, which are not included in these observations.

In our opinion, the most important types of steel in Group i are:

[1] rustproof and acid-resistant steels
[2] the four weldable austenitic chromium-nickel and chromium-nickel-molybdenum steels
[3] to this must be added the heat-treatable ferrite 13-percent chromium steels and the X8 Cr 28 steels for the production of nitric acid

[4] the martensite X35 Cr-Mo 17 steels for the machinery parts of the synthetic material industry
[5] the conventional ferrite and martensite chromium steels which are important to the electric power supply

In the opinion of the material-testing stations of the chemical industry, 11 to 12 types of steels are sufficient in this field.

In Group 2 of the pressure hydrogen-resistant steels, the most important types for us are the heat-treatable steels with at least 2.5 percent chromium and additions of molybdenum, tungsten, and vanadium.

In Group 3 of the heat-resistant steels, which are of particular significanc for the electric power supply, we believe that a reduction to the most indispensable and most important types has taken place already.

In Group 4, the heatproof and tinderproof steels, the ferrite chromium-aluminum steels of the sicromal types 8, 10, and 12 are of particular interest to us.

It is the Buna Plant which indicates a continuous though small need for sicromal 12. The nitrated, chromium surface-plated, and alited steels are still sparingly utilized in the chemical industry and are assigned to it for only a few special purposes.

In our opinion, the program of 61 types of steel devised by the metallurgical industry and the Iron Research Institute in Henningsdorf should be regarded as the maximal program for our metallurgical industry and as rather too comprehensive, although we do not wish to pass final judgment on this matter. In many instances, the requirement for certain alloys amounts to but a few tons a year. The Buna Plant, for instance, requires 12 tons of sicromal 12 per annum.

It should be examined whether it is opportune to cover such small requirements by our own production. We recommend that the possibilities of cooperation with the allied countries be thoroughly exploited and that our output be aligned with that of the Soviet Union, Poland, and the Czechoslovak Republic. However, the types of steel that are adopted for our production program must be of consistently high quality. Demands for an improvement in quality are coming from all

quarters of the chemical industry--for instance, the demand that utmost attention be paid to introduction of the steel degassing process.

4. Requirement for Products of the Second Stage of Manufacture

The form in which the material is delivered is of equal importance to the chemical industry as the material per se. The plants are interested, in the first place, in semi-finished products for repair work.

For new installations, repairs, and reconstruction measures, fine, medium, and heavy metal sheets are in demand, also solid-walled and electroplated pipes of all dimensions and all wall-thicknesses for high and low pressure and rods and profiles of all dimensions.

The insufficiency of deliveries to our industry of semi-fabricates and rolled-steel materials has been the subject of negotiation for years; it causes great delays and irritation. Therefore, a solution of these problems is just as important as is the output of the desired materials.

Because of the lack of profile steels required, the forging, cutting, and drilling of larger profiles entails considerable difficulties and cost. Furthermore, this deprives the production process of manpower and machines. This demonstrates the necessity of manufacturing a certain basic assortment which would ensure smoothly functioning deliveries to the chemical industry within not too large a cycle.

Urgently required efforts for the production of urea and melamine had to be postponed in our plant for half a year, because the alloyed steel pipes necessary for this purpose were not available.

In the field touched upon here, the problems of trade and output are closely linked. We must arrive at a point at which our trade organizations actually engaged in trade and forego the part of intermediary still played by them. One of the pertinent requirements is that a certain basic assortment of semifinished products be kept in stock and be delivered to us if and when required.

The possibilities for delivery are frequently obscure, especially when ordering from abroad, and are in sharp contrast to the material inventory standard required.

These problems will not be discussed here in detail, but a synopsis of a few needs of the chemical industry may be presented here:

a) Expansion of the rolling mill capacity for austenitic steels, and particularly for the output of pre-rolled bars, pipes, and sheets of larger size (above 1,000 x 2,000 millimeters).
b) Expansion of the capacity of pipe mills, for the manufacture of seemless as well as welded pipes.
c) Expansion of the heat-treating capacity in the steel mills so that the cast and rolled parts may be delivered in heat-treated form.
d) If the delivery of tested raw materials is accompanied by certificates, the plants that make the delivery must see to it that the larger number of errors made in the identification of materials is overcome.
e) Provision of rustproof austenitic chromium-nickel steel sheets with faultless surface, which so far could not always be depended upon.
f) Taking up the preparation of electroplated sheets and pipes.
g) Production of pressed floors for distillation columns made of alloyed steels.
h) Expansion of facilities for the production of flanges and screws.
i) Overcoming the present difficulties in the armature industry by means of expansion of the productive facilities for steel casting.
k) Introduction of up-to-date methods of the testing of materials in rolling mills and machine-tool plants.

5. Requirements for Nonferrous Metals

The nonferrous metals chiefly utilized in the chemical industry are zinc, lead, copper, and aluminum. The precise volume of requirements for the chemical program cannot be established, because it is not known whether the increase in output in alloyed steels as desired by us can be realized. For example, as was mentioned earlier in this article, lead, aluminum, and copper are supposed to be replaced by high-grade steel in our reactive installations.

It is generally noticeable that there is a gradual transition from expensive nonferrous metals, which are not fully corrosion resistant, to alloyed steels.

As estimated by us, the volume of lead consumption by 1965 will be only 130 to 140 percent of the present figure, that of copper--nearly 150 percent; and of zinc only around 125 percent. Only the utilization of aluminum will roughly double. We expect that the use of zinc for zinc-lined containers will retrogress, since it will be possible for the chemical industry in the near future to use corrosion-proof synthetic coatings on ferrous sheet metal and on other metals by means of vortex sintering and flame spraying.

Chemistry itself is making a considerable contribution in the matter of substituting other materials for nonferrous metals in previously traditional fields of application. High-quality raw materials of polyamide and other plastic substances are available today which have proved their worth as gears, shafts, armature boards, and measuring instruments. This development will continue to intensify.

Rare metals, such as titanium, beryllium, tantalum, and alloys of the Hastelloy type are slated for processing in the chemical industry. However, the requirements for these metals will probably be limited to a few tons per annum, at the most. Here too, we take the position that the cooperation potential within the socialist camp has by no means been fully exhausted. Incidentally, it seems that the evaluation of the value of certain metals depends on the whims of fashion. We believe that a very thorough testing of the use of a rare and expensive metal must first prove its value. This is also the case, in the first place, of rare metals of Mansfeld copper shale.

Silver, gold, and platimun are precious metals still unexcelled in their value for the chemical industry; unfortunately, their application cannot yet be reduced through the use of native metals obtained from the concentration process (Spurenmetalle). Here, much research will be required in order to arrive at a definite judgment.

It has been attempted, starting from the targets of the chemical program, to define the tasks confronting the metallurgical industry. In view of the multitude of the existing problems, this attempt had to be limited to a few examples and some special fields of cooperation. This cooperation between the various branches of our industry may serve not only for the realization of the chemical program but should also contribute to the solution of the tasks of the metallurgical industry.

1985

EAST GERMANY

The Production of Smelter-Slag Pumice in East Germany

[This is a translation of an exerpt from an article by Kurt Saeuberlich, Joachim Guenther, and Walter Koch in Neue Huette, Vol V, No 1, January 1960, East Berlin, pages 18-20; CSO: 3849-N/c]

Description of the Smelter-Slag Pumice Installation of the "J. W. Stalin" Metallurgical Plant, Stalinstadt

The installation for the production of smelter-slag pumice by the jet plate process was constructed near the central granulation installation of the plant in a way that created favorable possibilities for transporting the incoming liquid slag and at the same time ensured the smooth removal of the smelter-slag pumice produced. This, to a certain extent, rounded out the installation for the utilization of slag, since a large installation for fully mechanized production of structural materials from blast-furnace slag was constructed simultaneously.

Figure 1 shows the organization of the plant and the flow of materials. The containers, of an average capacity of 15 tons, which are transported on the "slag track" from the blast furnace, are placed next to the two "foam plates," of a surface of 36 square meters each, and are tipped directly, while the slag is met by a counterspray from 1,600 jets of 4 millimeters in diameter each of water under a pressure of about 2.5 atmospheres. The whole process is controlled and observed from a central control stand situated at each of the foam plates.

After termination of the foaming process (about 2 to 3 minutes) a hydraulic installation tips the plates to approximately 60 degrees while simultaneously a flap opens on the side of the plate opposite to the side of the inflow. The foaming slag slides into a collecting pit, from where it is taken out by means of a gripping device which runs on an endless electric overhead chain- and trolley-conveyor and thrown down on the "cooling cascade." A second gripping device of the electric overhead trolley conveys the cooled off

smelter-slag pumice from the outlet of the cooling cascade to the crusher filler shute, which terminates in the "crushing house" at the top. The raw product is then conveyed to the cam roller-crusher by means of a pushcart feeder via a magnetic drum for the removal of iron. Trituration is effected to a size of less than 30 millimeters. A belt conveyor transports the crushed material to the "sieve house," in which two separate sieve tracks, each having a double-decker sieve and a single-decker sieve, are installed. Underneath the sieving machines, the "bunker cells" are located; these pick up fractions of 0-3, 3-7, 7-15, and 15-30 millimeters. From these bunker installations the graded material is immediately hauled away in freight cars or trucks.

A detailed description of the installation from the technological and construction aspects is reserved for another article, which will also present the production figures obtained since the existence of the installation and will report on the quality of the smelter-slag pumice produced.

Foaming of Ferroalloy Slags

The experiments in foaming made by the pig iron industry of the GDR have been extended by the Research Institute for the Production of Pig Iron to the slag of the Lippendorf Ferroalloy Plant. This was done for several reasons. In the first place, in Lippendorf slag is left over from ferrochromium production which is removed as waste to the pit heaps; in the second place, there is ferro-manganese slag, which, because of its large manganese content, represents an important raw material for the produttion of pig iron. In between these there is a type of slag which, though of relatively high manganese content, has the drawback of containing too much silicic acid, yet appears suitable for the production of pig iron under certain conditions.

In the Lippendorf Ferroalloy Plant attempts at foaming were initially made according to three conventional phases--the pit process, the jet plate process, and the injection process. The slags examined showed a totally different reaction to foaming. In spite of the very high temperatures inherent in this process, the ability to foam rests without exception on the chemical composition. To this too applies the already established principle that processes with high foaming

intensity and sufficient effective capacity result in the lightest and best-processed foam product. With regard to acid silicomanganese slags, for instance, a weight of only 360 grams per liter was obtained on the jet plate. The mechanical durability of these foaming products, however, was too limited to withstand the stresses in the production of construction materials. Similarly favorable is the foaming reaction of ferro-chromium semifinished product slag, which, apart from 2 percent chromoxide, contains 39 percent silicic acid, 18 percent aluminum oxide, and 39 percent magnesium. The substance of this slag, after foaming on the jet plate, had a weight of 330 grams per liter. Here too the mechanical firmness of the pumice granule was insufficient. One could have expected similar weights per liter with refined and carbonized ferro-chromium slags on the basis of their chemical composition. Nevertheless, their weight of 1,100 grams per liter on the jet plate was very high. Practically no foaming was observed in these instances. The reason for this is no doubt the very high content of heavy-metal protoxide, which is foam-resistant. Both still contained between 5.3 and 6.3 percent chromium-protoxide.

Therefore, the conventional foaming processes are not applicable, or are applicable only to a limited extent, to the non-reusable slags from chromium production and in metallurgy.

Another target was pursued with the foaming of slags, which are reutilized in metallurgy or the utilization of which would appear to be profitable, under certain conditions, in the production of pig iron. As for slags from ferro-manganese production, their manganese content is the decisive factor for their reprocessing. . A reutilization of acid silico-manganese slag--the ratio between the basic elements and the acid is 0.4 to 0.5--would seem profitable only with a relatively high yield in manganese, especially since their mangano-protoxide content is only about 23 percent.

The yield of manganese in a blast furnace under equal operational conditions, such as mixture pouring, slag basicity, quality of pig iron, air temperatures, etc., depends to a great extent on the reduction reaction of the manganese-containing materials. The reduction of protoxide of manganese, with reference to the ferroalloy slags discussed here, takes place only in a direct way--i.e., by way of solid carbon. It is particularly important for reduction blast furnaces (Niederschachofen), because of their short

processing time, to accelerate the heat transfer between gases and solid elements, so that the solid elements are brought up to the reduction temperature quickly. Since heat transfer is, among other things, a function of the surface of the materials, it should be attempted to employ materials that are difficult to reduce in the form of smallest possible granules--i.e., over a large surface. The foaming of ferro-manganese slags in a drum is one way to reduce the utilized granules, without subsequent crushing, to a size of about 30 millimeters from sizes of more than 80 millimeters. Figure 2 shows a granule distribution diagram for ferro-manganese slag after foaming, in Lippendorf.

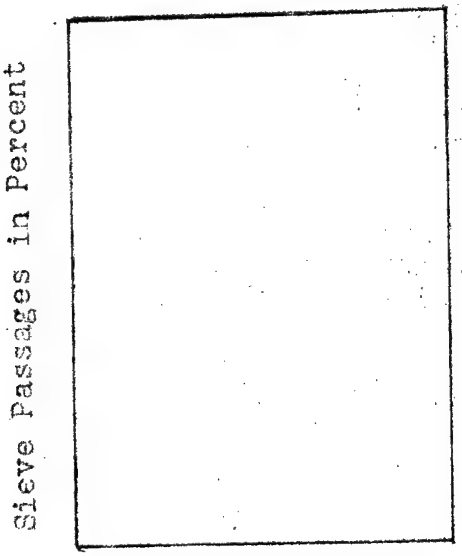


Figure 2

Ferro-Manganese Slag
Granule Index Lines

●——● "Donauwoerth" Reduction blast furnace

o---o Foaming drum

For the sake of comparison, a granule distribution curve for ferro-manganese slag is inserted in the diagram, as it is currently being processed in the reduction blast furnace of "Donauwoerth" in Unterwellenborn. If one places an upper limit of 30 millimeters on the granule size of ferro-manganese slag for use in the reduction blast furnace, there remains a 73.1 percent surplus of granules, while after foaming, no unused granules are left. Furthermore, the foaming of these slags has an ameliorating effect on manganese production,

inasmuch as a certain--at times very high--porosity is attained, which also is equivalent to an increase in surface.

The effect of foaming on the yield of manganese will soon be the subject of large-scale technological tests at the "Donauwoerth" reduction blast furnace in Unterwellenborn as well as at one in Calbe. In order to process for a useful purpose also the fine granules of 0 to 5 millimeters that result from foaming, it is planned to manufacture from them briquettes of high manganese content and to use them as an additive [flux material] to the specular iron mixture of the reduction blast furnace in Unterwellenborn.

Figure Caption

Figure 1. [page 18] Over-all view of the installation for the production of smelter-slag pumice in EKS [presumably Eisenhüttenkombinat Stalin; "Stalin" Metallurgical Combine]. Sketch by Sketch Drafting Bureau for Industry, Berlin.

1985

1951--The "Donauwoerth" reduction blast furnace was constructed and placed into production.
1956--A steam-treating installation in the blast furnace plant of the "J. W. Stalin" Metallurgical Combine, as well as a large technological experimental plant for the output of smelter-slag pumice.
1957--A large experimental technological plant for calcination and agglomeration were constructed.

A few essential examples--such as the development and introduction of the reduction blast furnace process, the increased productivity of the reduction blast furnaces, the application of water-vapor enriched hot air, the sintering of iron ores, the working methods for the production of smelter-slag pumice--show that the initiation of research work by the Institute has resulted in great practical benefits for the national economy.

Pig iron of a volume of 1.6 million tons had been smelted since the initiation of the reduction blast furnace up to the time of this report in the Calbe Plant, and 170,000 tons of special pig iron have been smelted in the "Donauwoerth" reduction blast furnace in Unterwellenborn. This means a saving of about 530 million DM in foreign exchange which would have to be spent for imports of pig iron, and a saving of at least 32 million DM in foreign exchange annually for the imported coke required for the production of pig iron in our blast furnaces.

Various research orders of the Institute concerned an increase in productivity of the reduction blast furnaces.

While the furnace productivity initially amounted to 40 tons of pig iron in 24 hours, this quantity was soon exceeded and it now amounts to 120 tons of pig iron per 24 hours. The reduction blast furnace itself, of course, played a substantial part in this improvement of furnace productivity.

Costs were greatly benefited by the improvement in furnace productivity; they dropped to about one half as a result of the various measures taken since 1952. This productivity rise has made it possible to forego the planned construction of an additional ten reduction blast furnaces and to place these funds at the disposal of our national economy for other purposes.

In cooperation with the plant, the specific coke consumption has decreased by about 500 kilograms in Calbe since the start of production. At an annual output of 260,000 tons of pig iron, this corresponds to a reduction in expenditures for fuel of 9 million DM.

Also worth mentioning is the research work concerning the production of smelter-slag pumice, which is particularly significant for the large-block construction method.

Of the planned tasks not yet put into practice, of important are the development of processes and the large-scale technological output of ore briquettes--i.e., the creation of the prerequisites for the fabrication of fine-ore briquettes and the development of the technological conditions and the operation of a blast furnace as a reduction furnace.

In critically surveying the accomplished research work, the complete absence of exact economic calculation is frequently noticeable, which lack is often the result of the nonexistence of statistical indices; this is a great shortcoming.

In the execution of orders, continuous considerations of economic aspects are absolutely essential with respect to the execution of the order as well as to the economic effect of the partial results accomplished. Finally, mention should be made of the necessity for intensified consideration of economic factors in planning. The rough analysis made up for every plan proffered so far have in no way filled the requirements.

For this reason, the Research Institute will establish an economic work group, which first of all will determine a correct method for such considerations of economy. Attention should be paid to the fact that for an all-around economic review a mere estimate of the national economic benefit is not sufficient, and thus such indices as invested funds, return time (huecklaufzeit) of the funds used, and others are of great importance and must be taken into consideration in working out a method for determining the beneficial effect.

Economic calculations are to begin with setting up the objective to be planned, together with the so-called rough economic analysis on the basis of the assumed work results.

This calculation must simultaneously serve as a justification for the propriety of carrying out the work.

The next step comprises the economic calculation, which is made after the conclusion of the work. It furnishes the economic justification for the necessity or propriety of putting the work results into practice.

The last step is the actual profit calculation, which rests on technical data from the plants concerning the adopted results of research.

Besides profit calculations, the economic work group will also take over other work, such as serving as intermediary for economic information--especially for new indices, and cooperation in the economic field with institutions and plants.

In this connection, a critical evaluation of the planning and the work organization of the Institute was given in the report, the results of which are reflected in the resolution and will be briefly mentioned later.

In accordance with the designation of tasks for the Research Institute, professional contacts exist between it and almost all the plants of the VVB Iron-Ore-Pig Iron, first by way of orders for research work and second through socialist collective work, work circles, and by way of its tas s as a technological-scientific center. In order to successfully carry out this cooperation between the plants and the Institute, a scientific staff member has been appointed by the Institute as permanent liason man, who will participate in the most important conferences on production and in meetings of plant administrations and similar matters, while more understanding and the required assistance are expected to be forthcoming from the plants.

The Pig Iron Production Research Institute, in its very early days, had begun the organization of socialist work collectives. Today, scientific staff members and professional workers of the Institute work together with engineers and professional workers of the plants in three socialist work collectives.

The experiences of the Institute so far indicate the need for small brigades of all-around professional training with strictly limited tasks, the employment of which would hold out the greatest promise for success.

Socialist collective work represents a new method of socialist labor organization and simultaneously is, apart from contractual research work, a good method of introducing engineers and scientists into practical work.

That is why the long-range plan for 1959-1965 for research and development was devised with special consideration for the second stage of socialist reconstruction and, thus, of socialist collective work. Therein, the following points of view received attention:

Improvement in plant productivity
Improvement in processing technology
Increase in labor productivity
Utilization by smelters of now unused raw material reserves
Expansion of the production assortment
Development of new processes

The economic conference took place under the slogan:

"Apply science more effectively in the future in order to develop socialism more rapidly."

This also was reflected in the contributions to the discussions.

During the present period, it is absolutely essential for the realization of the tasks of the Seven-Year Plan to consider more seriously the unity of politics, economy, and technology in scientific research as well. Numerous participants in the discussions offered directives on how this might be accomplished in the future.

First of all, the problems of the useful effect of the research tasks, beside an improvement in the cooperation between plants and institutions, were stressed.

If an increase in labor productivity is the decisive problem for the Seven-Year Plan, the same holds true for scientific research activities. This was particularly stressed by Professor Rommler of the German Fuel Institute in Freiberg.

The useful effect of scientific research work, he stated, is essentially determined by the manner in which the staff

members manage to introduce the results of their work into practice.

This, however, does not end the problem for the scientist, since it is now essential for him to train his spiritual children in the plant.

Dr Holzhey of the Stalinstadt Metallurgical Combine stated that the most important condition for a more extensive useful effect of the plant research department is close and unselfish cooperation between plant and plant research.

Furthermore, close cooperation between the research departments in the plants and the Pig Iron Production Research Institute is essential; therefore, quarterly discussions are suggested.

Besides, special attention should be paid to exchange of experiences between plants of kindred type. In this instance, money and time may be saved by educational trips abroad.

Diploma Engineer J. Guenther, in his contribution to the discussion, dwelt mainly on the contacts which the Research Institute had abroad; this is of great value for the realization of the reconstruction and long-range plans, since the experiences gathered in educational trips thus accrue to our own national economy.

A good possibility for a maximal gain in time results, for instance, from better mutual information about current and finished research operations. In this, the conclusion of a friendship pact with institutes of socialist foreign countries working on similar problems would be of great assistance.

Professor Luedemann spoke about the cooperation between the Pig Iron Production Research Institute and the Freiberg Metallurgical Institute, which essentially deals with fundamental problems, while the Pig Iron Production Research Institute concentrates on processing techniques. Cooperation with the Research Institute is being further strengthened by the cooperation of the Metallurgical Institute in the work groups of the Scientific-Technological Council of VVB and through the preparation of graduate dissertations--i.e., through the treatment of basic problems.

The new method of reporting of the Metallurgical Institute on research accounting, dissertations, and graduate work of

engineers and workers interested in this field, within the framework of the Society of German Miners and Metallurgists, has already proved its value and constitutes a new foundation for the socialist research and work collective.

Dr Schmidt of the State Planning Commission asserted that the significance of socialist collective work was recognized by the Pig Iron Production Research Institute properly and on time, and that the first three socialist collectives were established as early as at the start of 1959. Due credit must be given to the Institute as the first research institute that has taken this road.[1] In his concluding statement, General Director Menzel of the VVB Iron Ore-Pig Iron said that the preparation as well as the conduct of the conference has demonstrated that the setting of goals, which the institute had proposed for the first economic conference, had been accomplished.

The contributions to the discussion of the participants in the conference produced valuable stimulants for changes in the draft of the resolutions of the Institute and, through this, brought about an improvement in its work.

Measures for the elimination of apparent shortcomings and weaknesses that have cropped up from time to time have been incorporated into the resolution with reference to future operational methods of the Research Institute. A few of these may be briefly mentioned here:

1. Establishment of an economic work group.
2. Development and publication of economic indices in final reporting and in annual reporting, besides profit calculations such as the relation of total expenditures of time to the time spent on actual production, of the financial outlay to the profit, of the requirements for investment funds to the profit, etc.
3. Elimination of simultaneous work on approved targets, but execution of orders according to the points of emphasis.
4. The time limit for the presentation of the final report (six weeks after the termination of the research work) is reduced by one week, and the report must be submitted immediately to the plant that is introducing the process. In a joint consultation between the VVB, the management of the institute, and the administration of the plant, measures and time limits for putting into practice the work results of the research orders are to be determined.

5. The liason personnel appointed by the Research Institute for the VVB Iron Ore-Pig Iron assume responsibility for the control and the obligatory introduction of the successfully concluded orders or partial orders for a period of one year after their introduction and will submit quarterly reports to the administration of the Institute and the VVB. At the end of the control year, the economic work group of the Institue will undertake a factual profit calculation on the basis of the indices to be submitted by the plant. Only then will the order be regarded as terminated.

6. An important problem to solve is the exertion of influence by the Research Institute on the investment procedures within the VVB Iron Ore-Pig Iron. Effective immediately, all the large investment projects have to be re-examined in a joint conference between the VVB and the Research Institute in order to ascertain whether these projects conform to up-to-date technology.

7. Meetings of the working staff of the plant to discuss newly arising professional and organizational problems in connection with the carry-out of experiments.

To the extent to which it is possible to realize the measures laid down in this resolution, future research work will contribute ever more to realizing the slogan under which the conference took place.

Footnote

1A special article will deal with the valuable experiences of the Pig Iron Production Research Institute.

1985

EAST GERMANY

The Tasks of the VVB Optics in the 1960 Plan Year

[This is a translation of an article by Dipl Econ Engr H. Strampfer, Chamber of Technology, Chief Director of the VVB Optics, Berlin, published in Feingeraete-technik, Vol IX, No 1, January 1960, East Berlin, pages 2-3; CSO: 3847-N/a]

On the threshold of 1960 it is worth while to look back on and look forward to cur work. The Seven-Year Plan, with its grandiose goal for the victory of socialism in the GDR, has a significance which is not to be underrated in assuring the peace.

The VVB Optics will increase its gross production to over 108 percent in 1960 as compared to 1959, and labor productivity to 109 percent.

In doing this, we optical equipment builders must, above all, accelerate the planned conclusion of developments and see to their rapid introduction into production for it is known that our equipment forms in mamy cases the foundation for the introduction of the newest techniques in the area of development and production in general machine-building as well as in electrical engineering, in chemistry, and--last but not least--also for scientific research and development work in many institutes and development departments in enterprises.

From this it follows that the problems of socialist reconstruction in our industrial branch are directly connected with the many-sided and rapid carrying through of scientific and technical achievements in order to obtain a specialization in production in our enterprises which is purposive and far-sighted. It is therefore necessary to alter the shape of production in enterprises of the VVB Optics in accordance with the proposals for reconstruction. Special emphasis must be laid on typing and standardization, for the requirement given in the establishment of the Seven-Year Plan "to radically type and standardize products and to concentrate and specialize the production program" is also valid to a large degree for the VVB Optics. With the consistent execution of typing and standardization in the course of socialist

reconstruction, we make ti possible to better and more rapidly introduce modern and highly productive methods, whereby we create good prerequisites for transferring the newest equipment quickly and in a planned manner into production in specialized enterprises.

It is therefore logical for the VVB in 1960 to give spetal consideration to the scientific research and development work by forming scientific and technical centers for optical-mechanical and optical-physical equipment in the Carl Zeiss VEB Plant in Jan as well as for the photographic and cinematographic industry in the Dresden VEB Camera dn Motion Picture Equipment Plant.

The "Optics" Scientific and Technical Center will, in addition to the solution of basic assignments, see its main task in better instructing and supporting our enterprises in their top assignments.

As advisory coucil, consisting of scientists and engineers as well as representatives from industry, will stand by the management of the VVB in working out a long-range plan as well as in solving special important assignments.

The formation of a scientific and technical center for the photography-cinematography industry in the Dresden VEB Camera and Motion Picture Equipment Plant along the same lines as the scientific and technical center in the Carl Zeiss VEB, Jena is necessary.

In the area of photo techniques it is necessary, in addition to shortening the time for research and designing assignments, to rapidly transfer results into production in order to overcome the still existing lag in all areas of the photo industry as compared with the top products in capitalist countries.

An especially important task is the construction of the "Photo and Cinematography" Scinetific and Technical Center, as well as the reconstruction of the large Dresden Camera and Motion Picture Equipment Plant according to the newest enterprise organizational knowledge.

Here the principle is valid that we can obtain a high profitability only when we produce the largest possible number of pieces by the newest technological methods. One of the prerequisites for this is the consistent carrying through of typing and standardization of our products. Good begin-

nings have been made in this area, but the decisive breakthrough must take place in 1960.

A good example of a typed photo camera is the "Werra," produced by the Carl Zeiss VEB, Jena, with its five types. A total of 931 parts are needed for these types, as follows: 99 parts for all types; 185 parts for three types; 333 parts for two types. [This does not include all 931 parts.]

The individual types consist of:

Werra I :	132 original parts
Werra II :	20 original parts and 132 parts from Werra I
Werra III:	85 original parts and 99 parts from Werra I
Werra IV :	99 parts from Werra I, 19 parts from Werra II, and 84 parts from Werra III

The further developed Werra camera will consist of 99 parts from Werra I, 10 parts from Werra II, 76 parts from Werra III, and 55 original parts.

The new cameras which will be produced in 1960 by the large Dresden enterprise will be constructed according to similar principles.

Above and beyond this, it is necessary to establish the long-range plans for after 1960 on the basis of the newest finidngs in research and development.

The Sixth Plenum of the Socialist Unity Party of Germany established that new forms and methods of work must be applied for fulfilling the tasks of the Seven-Year Plan. New forms and methods of behavior of the people in our republic have developed during the course of the Second Five-Year Plan. We recognize ever more the deep significance of the slogan given out by the government: "Work together; plan together; rule together!" Thus new forms of cooperation appear between scientists, engineers, and workers which have found their visible effect in the formation of socialist work associations and brigades. There are at the present time in the VVB Optics 395 brigades of socialist labor and 117 socialist work assocations.

Scientists and workers in the Carl Zeiss Plant had already formed complex brigades for fulfilling certain tasks in the

spring of 1958. The "Nucleus Tracing and Measurement Miscrope" (Kernspurmessmikroskop) Complex Brigade in the Carl Zeiss VEB Plant worked especially successfully and was awarded the Order "Banner of Labor" on the Tenth anniversary of the founding of the GDR for their excellent achievements.

The "ZRA 1" Brigade in this plant was also able to achieve great successes through the mixed treatment of their assignments.

A brigade was formed in the Dresden Camera and Motion Picture Equipment Plant to fulfill the assignment of developing the HK 8.

We must increasingly include the problems of typing and standardization of our products in our association work, and socialist work assocations must also be formed for this purpose.

It is characteristic of the ever-developing socialist consciousness of the workers in our branch of industry that workers, engineers, and scientists advise each other in common, each learning from the experience of the other, how to better and more rapidly solve the tasks given them. This association work will become the main method by which the tasks presented to us by the government are fulfilled.

Another important assignment is the completion of the economics of our industrial branch. The analytical representation of the present economic status, the historical development, and the establishment of long-range plans have great significance for the future management of the branch. Therefore they must be a work foundation in which the effects of the objective economic laws of socialism under the special conditions found within the branch can be indicated so that the management will be in a position to better manage the branch. Therefore, the idea of an interenterprise exchange of experience with enterprises of the same or similar production has just as much significance as the questions regarding departmental comparisons within enterprises.

Also, the exchange of experience between scientists for the purpose of the complex solution of special priority problems of the branch will serve the rapid and planned fulfillment of assignments in 1960.

The successful fulfillment of assignments in 1960, based on the ever-developing socialist assocation work, will provide

a secure point of departure in realizing the Seven-Year Plan and thereby the victory of socialism in the GDR.

1907

EAST GERMANY

Tasks of the Mechanics Industrial Branch in the Second Year of the Seven-Year Plan

[This is a translation of an article by Engr H. Scholtz, Chamber of Technology, Chief Director of the VVB Mechanics, Leipzig, published in Feingeraetetechnik, Vol IX, No 1, January 1960, East Berlin, pages 3-4; CSO: 3847-N/b]

The pledges given by the workers of the enterprises of the mechanics industrial branch in honor of the Tenth anniversary of the GDR to fulfill the production plan ahead of time and by correct assortment were fulfilled by 80.4 percent, and by these achievements the prerequisites for overfulfilling the state assignments for 1959 were also created. The increase rate in 1959 as compared to 1958 amounted to 15 percent.

Thanks to the great achievements of the workers, engineers, and sales personnel, it was possible to fulfill and/or overfulfill all state assignments in the first year of the great Seven-Year Plan.

For example, fulfillment took place as follows:

	Percent
Gross production	102.5
Export obligations	102.0
Operating results	102.0
Labor productivity	104.0

In 1959, 88.3 percent of all production workers participated in socialist mass competition and in the Second quarter the Thueringer VEB Industrial Plant in Rauenstein, and in the Third quarter the VEB Glassworks and Clock Plant (VEB Glashuetter Uhrenbetriebe) were awarded the transferrable pennant of the Ministerial Council (Wanderfahne des Ministerialrates).

Over 1,700 workers in the industrial branch joined together in socialist work brigades and work associations and pledged themselves to work, live, and learn socialistically.

In 1959 the workers, male and female, participated actively in working out the reconstruction and long-range plan up to 1965, and we can already, in the first part of the Seven-Year Plan, report favorably on the great success achieved in improving work organization, technology, and decreasing time losses. An annual profit of over 2.5 million DM was obtained through improvement suggestions introduced into production alone. Savings in applied suggestions in 1958 amounted to only 1.4 million DM. The workers of the enterprises of the VVB Mechanics can look back with pride on the achievements they brought about in 1959. Now we must establish from the combined experiences of the workers the measures necessary to assure the fulfillment of the state tasks for 1960.

In 1960 the Mechanics Industrial Branch has very large and complicated tasks to fulfill. They consist--expressed in indices--of the following increases:

	Percent
Gross production	112.4
Export deliveries	114.0
Labor productivity	114.3

Production costs are to be decreased by 8 percent.

An output considerably above the average of the VVB must be brought about in 1960 in several enterprises of the VVB Mechanics in accordance with the economic significance. Thus, for example, the Medingen VEB Testing Equipment Plant has the task, as chief producer of testing equipment installations, to increase production to 190 percent. The following plants will also increase their production as follows:

	Percent
VEB Injecta, Klingenthal	131
VEB Asepta, Berlin	120
VEB Materials Testing Machinery Plant, Berlin	117

The assignments in 1960 must be met without an essential increase in personnel through better oganization in production, the introduction of small-scale mechanization, and a decrease in time losses by the application of the Seifert method. This presupposes that each production worker has an exact knowledge of his daily production plan and works ac-

cording to the model set by the innovators, Christoph and Wehner. Work and material wastes, the costs of reworking, and the lost hours per production worker are to be decreased in 1960 as compared to 1959 on an average of 17 percent for the VVB.

Also, an essentially higher material utilization is to be reached in 1960 than previously in the area of material economy. For example, the material utilization coefficient must amount to 94 percent for grey cast iron and to 85 percent for steel and aluminum.

Assuring technical progress, the introduction of new highly qualified products into production, and the further development of products already in production are among the main tasks for 1960.

The enterprises of the VVB have planned to put over 70 new products in production and moreover to essentially improve 51 products in their function and quality. Machine-tool and accessory equipment construction must be expanded by 150 percent and a more rapid increase in personnel in the technological departments must be reached. Over 50 engineers and technicians will take up their duties as technologists in 1960. To support enterprises in assuring a more rapid technical progress, the following are planned: a scientific and technical center for medical [equipment] technology in Leipzig and further scientific and technical guidance areas for the clock industry, laboratory equipment construction, materials-testing machinery, and the scales industry. Over 60 scientific personnel will take over yheir duties in these centers in 1960.

We shall pay a great deal of attention to the standardization of products and machine parts. The 1960 program is a part of the assignment of the Seven-Year Plan. It is therefore planned to produce in the clock industry, under an essential expansion of the assortment in the future, 14 basic mechanisms as compared to the 28 clock mechanisms which are now being produced.

In the materials-testing machinery industrial branch, 104 basic types of machines were still being produced in 1959. In 1965 only 54 basic types will still be produced.

Standardization in the laboratory equipment and installation industrial branch will lead to the production of only 40 basic types in 1965, as compared to 118 basic types now produced.

An expansion of the present typification program to about 70 types will take place in the scale construction industrial branch, although emphasis will be placed on the standardization of the assembly groups.

Decisive reconstruction measures will be taken for expanding productive capacities, improving the technological process and the quality of products in 1960, especially in the following enterprises: the VEB Asepta, Berlin; the Thueringer VEB Industrial Plant, Rauenstein; and the VEB Precision Mechanics Plant in Sonneberg. Investment funds made available here from the state will be 15 percent higher in 1960 than in 1959.

Funds for carrying out reconstruction measures could be still greater if plants would make more use of investment credits.

These, then, are some of the most important assignments which are to be fulfilled in 1960 by the workers of the mechanics industrial branch. With the help and support of the Party of the working class, the workers will succeed in 1960 in fulfilling the assignments necessary for maintaining our German Democratic Republic; through these achievements we will contribute to the planned reconstruction of socialism in the GDR.

1907

EAST GERMANY

Development of Measuring, Control, and Regulation Technology

[This is a translation of an article by Engr K.H. Trautmann Chamber of Technology, Chief Director of the VVB Regulation Technology, Berlin, published in Feingeraetetechnik, Vol IX, No 1, January 1960, East Berlin, page 5; CSO: 3847-N/c]

The Fifth Party Conference of the Socialist Unity Party of Germany has established the basic direction of economic development in the GDR to 1965 and has indicated to workers the way to solve the main economic task and to the victory of socialism. These great goal objectives determine the contents of socialist reconstruction.

As the yardstick for the success of the socialist reconstruction are the net efficiency, the increase in labor productivity, the technical level, a decrease in production costs, and the obtained degree of economy in enterprises, these factors form the assignments for the measuring, control, and regulation equipment industrial branch within the framework of the main economic task, as laid down in the Seven-Year Plan.

The requirement of all industrial branches in the measuring and regulation equipment field is the creation of equipment and installations for the further mechanization and automation of the industrial production processes in accordance with the latest knowledge in science and technology. The measurements for the fulfillment of these requirements are established in the tasks of the reconstruction plan of the measuring and regulation technology branch of industry.

What are the most important assignments which must be taken up immediately in carrying out the reconstruction?

Research and Development

The enterprise development centers and the development groups situated outside the enterprises have occupied themselves in the past essentially with the individual develop-

ment of equipment for certain purposes of application. To be sure, the highest technical level was thereby achieved in regard to special equipment, but their greatest possible universal application was not guaranteed.

The task now is to thoroughly eliminate the existing disruption in development, to create universally applicable measuring and regulating systems, and to close the gaps in the existing assortment by 1961.

The technical center of the industrial branch--the Institute for Regulation Technology, Berlin--must bring about a stricter coordination of all development centers and their tasks and prepare technically pre-explained assignments for the maximum utilization of the available capacity in all development centers.

The highest level of technology is to be reached in all equipment by 1961. Individual development has led especially to a lag in measuring equipment for physical and chemical analyses, in automatic control equipment, programming equipment, and for measurement indicators for extreme dimensions. All assignments in research and development, which are for an extremely short period must be carried out by a strengthening of enterprise association work and by an accelerated development of interenterprise assocations, also on the international scale.

Standardization

Alongside the research and development assignment, standardization assignments must be carried out to eliminate the individual systems in measuring and regulation technology; these assignments must lead to a uniform prefabricated parts system. Beyond the required typing of equipment, we must arrive at a standardization which will make possible a complete exchangeability of individual measurement indicators, measurement value convertors, regulators, or adjusting devices, each according to the area of application.

Production

The production of measuring and regulating equipment must increase on the average to sixfold the 1958 production in 1965, so that assignments in the mechanization and automation of industrial production processes can be fulfilled.

Production specialization is to be carried out at an accelerated pace, and the participation of our workers in the reorganization of production is to be guaranteed through the increased formation of socialist work brigades.

Each production enterprise has to carry out the complex assignments situated within its sphere of production, which means that the enterprises which are specializing must not only carry out serial or large serial production but that they must also undertake special production and small series production which is typical for our industrial branch.

During the course of capacity expansion, the VEB Plant for Industrial Electronics in Leipzig and the Teltow VEB Apparatus and Regulator Plant will be expanded as the focal points of measuring and regulation technology. All remaining enterprises have to see, through a prompt start in planning, that the maintenance and expansion measures are concluded on schedule.

Planning and Installation Construction

The regulation technology industrial branch must in the future plan and assemble, for the applicable branch of industry, more complete and efficient installations, must provide for the setting of these into operation on schedule, and must guarantee a continuing maintenance.

This task signifies that the available planning and installation construction capacities must grow more rapidly than in the past.

In order to avoid parallel planning, a working out of certain type projects is required for installations which are similar or which will be repeated. The determination of the technical solution before undertaking the base project in regard to a large installation must take place through the Institute for Regulation Technology.

Technology

The technological preparation of production in our enterprises must be undertaken in a more purposive manner in order to obtain continuous production and high profitability.

EAST GERMANY

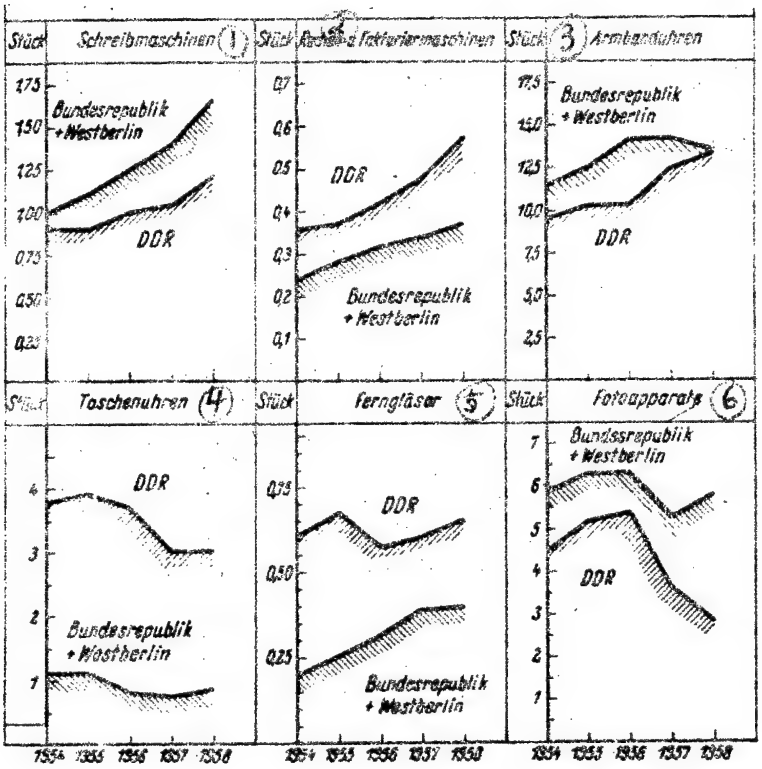
Per-Capita Production of Precision Machinery in Both German States

[This is a translation of an article by Dipl Engr H. Schulze-Manitius, Greiz, in Feingeraetetechnik, Vol IX, No 1 January 1960, East Berlin, pages 37-38; CSO: 3847-N/d]

It is not only the amount of available raw materials in a country that forms a criterion of the standard of living of a nation; the diligence and capability with which it produces food and confectionary articles, construction materials, and consumer goods of all types, partly for domestic consumption, and partly for export, are also criteria. For a nation that creates fluid values in peace, beautifies its life, and wants to produce only that which is excellent must be able to feed and clothe itself well and intelligently; it will live respectably and will have available in satisfactory amounts and in the best quality all the many consumer goods which it produces. To these also belong the many products of precision mechanics.

The effort to prove the superiority of socialism over capitalism and to overtake the German Federated Republic, not only in production and in the consumption of the most important foods and consumer goods but also in all important areas within a short period of time--insofar as the raw materials available do not set any limits--requires an exact knowledge of the production results at any given time in both the German states, unfortunately still separated from each other, with their different social organizations and economic systems, in order to quite openly and frankly recognize whether this goal in the GDR has already completely or at least in some areas been reached or how close we are to this goal and/or where special efforts must still be made.

As the state area of the Federated Republic is about 2.3 times as large as that of the GDR and as about three times as many people live in the Federated Republic as in the GDR, a comparison of both German states makes sense only when one considers the per-capita production of both sides or refers to a similar large population unit (for example, per 100 inhabitants), whereby the constantly changing population count



The Per Capita Production of Precision Mechanics Products (per 100 Inhabitants) in the GDR and the Federated Republic

1) Typewriters
2) Accounting and invoicing machines
3) Wrist watches
4) Pocket watches
5) Binoculars
6) Photographic equipment

Stück = number of items
DDR = German Democratic Republic
Bundesrepublik = Federated Republic

must naturally be considered, and for each year the population census which is valid at any given time must be taken as a basis.

What then is the per-capita production of the various important precision mechanics products in the last five years (1954-1958)?

The diagram included represents in six individual graphs on the per-capita production of typewriters, accounting and invoicing machines, wrist and pocket watches, binoculars, and photographic equipment in both German states.

The results of the survey are as follows:

The per-capita production of typewriters in the Federated Republic and West Berlin during this period was constantly larger than in the GDR and increased in both German states. In the GDR the increase was from 0.91 to 1.21 items per 100 inhabitants, or 33 percent (one-third). In the Federated Republic the increase was from 1.00 to 1.67 items per 100 inhabitants, or 67 percent (two-thirds). The production in the Federated Republic and West Berlin amounted in 1958 to about 38 percent (about one-third) above that of the GDR.

The per-capita production of accounting and invoicing machines in the GDR was constantly considerably larger than that of the Federated Republic and West Berlin,and it increased in both German states. The increase in the GDR was from 0.36 to 0.57 items per 100 inhabitants, or about 58.2 percent (over one-half). In the Federated Republic the increase was from 0.24 to 0.37 items per 100 inhabitants, or about 54.1 percent (one-half), thus by almost the same amount as in the GDR. In 1958, the GDR production exceeded that of the Federated Republic and West Berlin by 54.1 percent (one-half).

The per-capita production of wrist watches in the Federated Republic and West Berlin was somewhat larger than in the GDR and declined somewhat, whereas in the GDR there was at first a slow increase and then a sharp rise, which in 1958 nearly overtook that of the Federated Republic. The increase in the GDR from 1954 to 1958 was from 9.6 watches to 13.3 watches per 100 inhabitants, or 38.5 percent (over one-third). In the Federated Republic the increase was from 11.5 to 13.5 watches per 100 inhabitants, or 17.4 percent. In 1958 the production in the Federated Republic (and West Berlin) was only about 1.5 percent over that of the GDR.

The per-capita production of pocket watches in the GDR was essentially larger than in the Federated Republic and West Berlin, but it then declined in both German states in the last five years in favor of the production fo wrist watches. In the GDR the decline was from 3.8 to 3.0 watches per 100 inhabitants, or about 21.0 percent (about one-fifth). In the Federated Republic the decline was from 1.1 watches to 0.86 watches per 100 inhabitants, or about 21.8 percent (about one-fifth)--almost the same amount as in the GDR. In 1958, the GDR production exceeded that of the Federated Republic (and West Berlin) by about 248.8 percent, amounting to about 3.5 times that of the Federated Republic.

The per-capita production of binoculars in the GDR was always larger than in the Federated Republic (and West Berlin) and increased in both states from 1954 to 1958. In the GDR the increase was from 0.62 to 0.66 items per 100 inhabitants, or by about 6.5 percent. In the Federated Republic the increase was from 0.20 to 0.40 items per 100 inhabitants, or about 100 percent (double the Federated Republic (and West Berlin) by 65.0 percent (almot two-thirds).

The per-capita production of photographic equipment in the Federated Republic (and West Berlin) was always larger than in the GDR; it declined considerably in both states in 1957 and increased somewhat in the Federated Republic in 1958, while it continued to decline in the GDR. In the GDR the decline was from 4.5 to 2.9 items per 100 inhabitants, or about 35.6 percent (over one-third). In the Federated Republic (and West Berlin) the decrease was from 5.9 to 5.8 items per 100 inhabitants, or 1.7 percent. In 1958, the production in the Federated Republic(and West Berlin) exceeded the GDR production by 100 percent--double that of the GDR.

The results of this survey show that the per-capita production of the GDR has essentially exceeded that of the Federated Republic (and West Berlin) some of it for years in regard to accounting and invoicing machines, pocket watches, and binoculars, and that it has almost reached the Federated Republic production level in regard to wrist watches, while the GDR production of typewriters and photographic equipment is still below that of the Federated Republic.

1907

Since in the future, we must count especially on the production of small series in solving the problems of mechanization and automation, we must work out technological methods which guarantee a profitable production of small series. Basically new technological principles must be worked out in undertaking special production for individual areas of application of special economic importance, which, in spite of their being special types of production; must also meet deadlines.

In all technical measures the highest net efficiency must be determined from the beginning and the technological reorganization must be undertaken in the series production in the enterprise in accordance with the net efficiency.

These few problems which we mention here are only the most important and most basic for the industrial branch for the next period.

It is necessary that the tasks given us be carried out in a planned manner, including all workers and the technical intelligentsia, through the broad organizing of our plans, especially the TOM plan [technical and organizational measures].

The more we understand how to carry out our assignments through collective work, the more rapidly we will be able to increase the achievements already obtained.

1907

EAST GERMANY

Central Steam-Heating Plants

[This is a translation of an unsigned article in Energietechnik, Vol 10, No2, February, 1960 East Berlin page 81: CSO: 3846-N/a]

Technical Subcommittee for Central-Heating Plants

Place of Symposium: Karl-Marx Stadt
Time: 19 and 20 November 1959

The symposium was opened with an inspection tour of the construction site of the "Karl Marx Stadt North Thermal Power Station". Rated at 75 megawatt and 520 tons per hour, it represents the biggest of our republic's thermal power plant construction jobs in progress. The attendance, more heavy than expected, of inspection tourists alone showed that there is a growing interest in broad areas of our economy regarding central-heating supply problems.

The following are résumés of the lectures given on 20 November.

"Central-Heating Problems in the GDR," a report by Dr Reschke, Engineering Staff, VEB Power Planning, East Berlin

The major central-heating power networks planned in the GDR are expected to incorporate pipes having an NW [approximately valued] diameter range of 700 to 1,000. Over same range we use multi-circular jointed, lengthwise welded pipes.

A different problem to solve is the layout of the central-heating power network itself. The current network planning stage consists only of unsatisfactory versions of its final scope. Therefore, any expansion possibilities must be taken into account even at this initial programming stage.

The pipe bearings used at the present time still show many deficiencies. The trend is to get away from the usual roller and antifriction bearings and to try to use slideways made

of sintered iron or glass. Pertinent experiemnts are in progress but no conclusive results are in sight. The problem of designing hot-air ducts is currently handled by a socialist collective under the guidance of the Design-Engineering (Typing) Institute. The pro and con factions are equally divided on the feasibility of laying ductless pipelines. The reason for this is the difficulty of pinpointing their defects. Experiments to this effect are also going on at the present time.

"Planning Guide for the Current State of the Central Thermal Power Supply in Hunagry," report by Certified, Engineer, Candidate of Engineering Sciences Erdelyi, Budapest

A Budapest power plant is being equipped now with new reaction-pressure or special steam-turbine units. After the conversion job is finished the plant's capacity will be 400 tons per hour. In terms of electric power supply, this makes it a peak-output type plant.

The central-thermal power supply schedule for 1965 provides for 14 industrial power plants to be built with a total steam power potential of 1,100 tons per hour. The steam pressures generated in this way will range from 40 to 116 kiloponds (kp) per square centimeter.

In conclusion, the lecturer explained some of the problems encountered in the bleeder-pressure control of the new HKW [Thermal Power Plants]. To make available to the state network a full electric power reserve supply in times of peak consumption steam accumulators and emergency condensers are being installed.

"Justifiable Subscription-Cost Estimates For Centrally Controlled Hot Water Supplies from the Viewpoint of Engineering and Economics" report by Certified Engineer of Economics Strauss, VEB Power Supply Karl-Marx Stadt

Heat prices must benefit consumers who increase their time of operation for the entire installation and who increase their temperature differentials between pre-run and reflux. Our pricing system now in effect does not quite meet above requirements.

The temperature differential in terms of central heat-supplied hot water lines corresponds to the power factor $\cos\varphi$ in terms of production and transmission of electric power. The same differential is to be taken into account in regard to installation-assembly and production costs as well as over-all economical thermal efficiency. A higher temperature differential rating, which means more satisfactory operating conditions, depends last but not least on the consumer himself and his installation. Therefore, the consumer's interest in saving must be stimulated--that is, the cost of a raised temperature differential must be systematically estimated.

The best way to meet the above requirements--the lecturer suggests--is to establish a dual type of price (paying for basic and output costs). The basic price should be fixed according to the subscriber's [network-] connected load. A temperature differential assigned in advance to the subscriber would emphasize the importance of this kind of rating. In this way, the assigned temperature differential would be a basis for estimating costs.

In the discussion [that followed], the above-presented problems underwent a thorough airing.

Coupled with the general applause for the participation of the Hungarian visitor was the wish expressed that future symposiums be held in a similar way. Still to be developed in the future is an international exchange of practical experience. Particularly the Soviet Union, which of course can draw on many years of experience in construction and operation of central steam-heat plants, is expected to be a source of valuable technical information.

EAST GERMANY

Gas Distribution

[This is a translation of an article in Energietechnik, Vol X, No 2, February 1960, East Berlin, page 82, CSO: 3846-N/b]

Place of Symposium: Dresden
Time: 2 and 3 December, 1959

On the first day's agenda were reports by colleague Walter on the assembly of disk-seal type gas tanks and by colleague Barth on the operation of open-air type unit regulators. This was followed by an inspection of both objects.

The still unfinished disk-seal gas tank, which is located on the grounds of the Dresden-Reick Gasworks, ahve an operational volume of about 15,000 cubic meters. The building of this tank was a teamwork job shared by plants in both Czechoslovakia and the GDR. Compared with the circular and lengthwise-welded MAN [Manometer Type] gas tanks, this disk-seal tank is an all-welded job. It is assembled in stages, by first mounting the tank cover and disk components at an 11-meter level and then with the assembly in progress, by injecting air under the disk to raise it to its maximum height of 83 meters. For disk-sealing purposes a heavier-than-water tar-bearing oil is used which functions as a rotary-type compressor. The tank pressure is 150 millimeters WS [Water Column] and can be increased by loading the disk with weights up to a water column pressure of 320 millimeters. The tank cover area is accessible from either the exterior stairway or the elevator of from the internal foldable iron ladder and mobile cage type elevator, which makes disk inspections possible at any operational level [Scheibenstellung]. Gas-feeding or outlet is accomplished by two lines each having an approximate diameter of 1,000 and a lead-in at tank-bottom level.

The first open-air type of regulator unit built in the GDR is in operation now at the Dresden-Reick grounds. This unit is equipped with threee control rails and one reserve rail which is linked to the other three rails. The total output of the unit is 25,000 cubic meters per hour. A two-step control is needed to keep the pressure constant after

testing the mass flow through first step-control orifice plates. The input control effects a drop in pressure from a maximum of 20 to one atmosphere, while the output control releases the pressure from one atmosphere to the applicable operational pressure value. The gas is fed through the regulator unit at water column pressures between 200 and 500 millimeters to the bottom-fired furnaces, from there--at a 500-millimeter water column pressure--to be added to the urban utility type gas mixture and finally at 0.8 atmospheres to enter the mean pressure network.

The control rails are mounted in parallel on a concrete base. The recording and indicating instrument panel plus the dual-control valve oil-pump mechanism are located in an adjacent station house within a space of 5 by 4 meters.

In case of regulator installations with an average output of 10,000 cubic meters per hour, it would be practical to consider whether or not same installations should be built an open-air type unit regulators. The reason for this is a possible saving of up to 50 percent of the capital invested where conventional regulator types are concerned.

The second symposium day was devoted to a report by colleague Barth on how to operate and save with Mattik-tupe after-boolers. Furthermore, the work schedule of the FUA [Technical Subcommittee] collectives for the plan year 1960 was discussed.

The Mattik coolers used by the Erfurt and Arnstadt Gasworks to cool off compressed gases are located behind the compressor units. The output of the Erfurt cooling plant is 5,000 cubic meters per hour with an average water-adsorption efficiency of 86 percent. The gas entering the cooling plant cross-flows around the cooling pipes, which has a piston-damping side effect on the gas column. This type of cooler permist the pulling out of the entire radiator-pipe unit. On leaving the cooler, the gas enters the water-adsorption aggregate, the economical design of which decisively affects the water-adsorption efficiency rating.

After the briefing by the chairmam and the discussion by the colleagues present on the assignment schedule worked up by the five FUA collectives, the schedule was approved.

In conclusion, various problems dealing with the [postwar-reconstruction] reorganization of the pipelines production branch were discussed.

2084

EAST GERMANY

Tasks of the East German Coal Industry in 1960

[This is a translation of an article by K. Siebold, Chief Engineer in Charge of the Coal Mining Section, State, Planning Board, published in Bergbautechnik, Vol X, No 1, January 1960, East Berlin, pages 1-3; CSO: 3855-N/a]

In many respects 1959 was a year of decision for the GDR lignite-coal mining industry. The past 12 months saw substantial changes in production techniques and an attack on basic problems confronting this industrial sector. This was accompanied by the collection of valuable data, the evaluation and subsequent application of which are bound to lead to a further increase in production by 1960.

Starting with the tipple system used at Nachterstedt, the Politbureau of the Socialist Unity Party Central Committee thoroughly discussed the lignite-coal mining situation, and on 24 March 1959 made the top-level directive decision to correct the mistakes of the political and engineering management in the lignite-coal industry.

The Politbureau directive fixed the principal targets for trouble-shooting and remedying the weaknesses existing in this industrial sector. The directive urged the over-all review of political and scientific engineering regarding industrial safety improvements, the establishment of a scientific system of technology, and the correction of operational bottlenecks in the lignite coal mines. The most acute problems to be solved were listed as the"manager complex" and the carelessness and sloppiness which exist everywhere in the lignite coal industry. In this connection the creation of a close union between state and industrial management on the one hand and the workers and their intelligentsia on the other hand was put on the high-priority list. The directive also urged a bolder approach to training and utilization of young industrial cadres as the best way to improve industrial field relations.

The Party cadres have taken the lead in implementing the Politbureau directive everywhere that it counts. This was done by the timely recognition of the fact that the directive

in essence means not some superficial organizational and technological improvements but a political reorganization from the top by keeping in close touch with the working masses and by reinforcing Party leadership in all sectors of production.

In each case where the Party took the lead in reversing the present trend in the lignite coal industry (as it happened in the area of the VVB (Cottbus Brown Coal), the existing mess was quickly cleaned up.

In the Politbureau top-level directive, the major fact-finding work done by the "Coal" Section of the State Planning Commission has cleared up a number of basic questions in the industry by issuing pertinent directives. These are characterized by a high degree of scientific competence because before their issuance they were discussed by many workers, plant managers, state economy officials, and scientists. For example, the decisions rendered on drainage work done in lignite-coal open pit mining and on hydrogeological research projects have substantially contributed to a uniform operational safety system in effect now at op n pit mines.

While at the time of the Politbureau action there were still 29 open pit mines on the critical list, today there are only six mines left where the safety measures to alleviate the drainage and other safety problems have not yet been completely implemented. But these open pit mines have already started work on rapidly liquidating the remaining safety bottlenecks.

The speedup in drainage work will result (in the majority of open pit mining projects) in advancing the drainage target date by one to one and a half years to the middle of 1960, as demanded by the Politbureau's policy-making board. The increased mechanization of manual-labor input by the sectional working of jet suction-pumps and hydraulic-powered flushing systems will force even the last stragglers in open pit mining to reach the advanced drainage quota by 1962.

Basic reorganization also of the programming sector should not only improve the quality of systematic production forecasting but increase the yearly rate of advancing production quotas. From 1960 on it is hoped this kind of presetting of goals will result in efforts invested in a correct production program.

The quality of projects is improved particularly by a competent appraisal of potentials of Politbureau decisions. From 1960 on each project will have at its disposal a basic planning socialist collective. Its job will be to make sure that workers and plant engineers will have a chance to control production on a direct and regular basis.

To reach the peak of scientifically based coal-industry engineering, the Politbureau demands the creation of a scientific engineering center. This task has been given to the German Fuel Institute to do the necessary basic and applied research under actual plant-operational conditions. For this purpose a new statute has been worked out to establish the main functions and responsibilities of the institute as the technological center of the coal industry. In this connection a clearcut operational division of institute departments has been achieved and officially approved.

Of great importance for the coal indsutry was the putting into effect of the Seven-Year Plan paper and the plans for socialist reconstruction. At the Sixth General Assembly of the Central Committee of the Socialist Unity Party of East Germany, Walter Ulbricht said: "News is made by the great creative contribution of the people to the elaboration and execution of the Seven-Year Plan. The Seven Year Plan is the expression of the collective wisdom of the Party, the government, and the masses." This was also confirmed by what happened in the lignite-coal mining industry. The streamlining of political leadership and the revolution that has occurred in the political education of the working masses have created the conditions for the unique fact that fully 80 percent of all workers in the coal industry have participated in the debate on the Seven-Year Plan. A higher level of mass conscience was displayed by the mass hearings held by coal industry workers and the suggestions made on carrying out reconstruction plans. A review of about 6,000 suggestions has become a valuable source of operational savings amounting to a total of 375 million DM.

The same trend is noticeable in the steady expansion of the brigades which compete for the honorary title of "Brigade of Socialist Labor" as well as in the growth of socialist collectives. At the beginning of December 1959 the coal industry had a total of 1,468 socialist collectives with a total membership of 12,275 members and 2,300 socialist brigades with 36,497 members. A comparison of this figure with that of 1 June 1959 (354 socialist brigades with 3,832 members and 645 socialist collectives with 4,335 members) shows an extraordinarily rapid and borad expansion of activities.

In the beginning, a large number of administration functionaries stood by and just watched this development, because they still underrated the drive of the workers involved and the new type of labor under socialism. Only after a thorough evaluation of the decisions made by the Fifth General Assembly of the Central Committee of the Socialist Unity Party of East Germany could these functionaries be won over to cooperating in a broad sense with the socialist brigades and collectives. The most outstanding example of political education is the "Socialist Brigade" Award given to the four cola industry brigades which were honored on the 10th anniversary of the GDR. The four recipients are the "Pioneer Congress III" Youth Brigade (Brown Coal Mine in Ammendorf), the "Hans Guenther" Workshift Brigade (Brown Coal Mine in Regis), the United Brigade of Excavator 131 (Brown coal Combine in Lauchhammer), and the "Karl Leibknecht" United Youth Brigade ("Karl Marx" Anthracite Mine).

The new spirit of socialist competition was alive in the case of brigade champion Schacher, "Unity" Thraena Brown Coal Mine, who offered their socialist assistance to lagging brigades in raising their level to that of more advanced units. Today, on the basis of these test cases, there is a great movement at work which is worthy of more support than it now has. Some of our economists should feel honored to follow the example given by the champions of labor and offer their advice to mines lagging in production.

Great impetus was given to the socialist competition drive in the coal industry by putting the Seifert-Koschen method into effect. By putting competition on an economical engineering basis, this method aims for a more extended and efficient use of open pit mining and mobile equipment. To organize this competition drive according to this method alone is not enough. The reason for this is primarily the fact that the importance of this kind of competition is underestimated by a large majority of plant economicsts. Despite the fact that many open pit mines follow the Seifert-Koschen method to the letter, the political and technological meaning of this competitive production method is lost on them. The efficiency experts of these open pit mines have still not realized the fact that the essence of this kind of competition is the human touch.

A serious bottleneck has existed for years in the development of better briquettes--a bottleneck which not withstanding some successes in this field, has not yet been liquidated. At the time only few functionaries recognized the fact that

in almost all mines of this industrial sector a new low in briquette quality had been developing.

The original economic reconstruction plans contained only few direct provisions made for improving briquettes. This changed only with the clear-cut orientation given by the "Coal" Section of the State Planning Commission in conjunction with the Central Executive Board of the Mining Trade Union concerning quality briquette production. In June 1959, a psecial conference of workers and efficiency experts from all briquette plants of the republic was called to discuss the steps to be taken to improve the quality of briquette material. A broad exchange of data was later condensed in the form of a brochure, which furnished each worker with practical hints on improving the qualtiy by his own efforts.

In the third quarter of the year additional briguette plant brigades conducted tests which resulted in establishing procedures for improving briquette quality at the plants involved. The activity of these brigades mobilized particularly the workers and technicians of these plants to put production tests into effect, which in turn resulted in a bettering of quality.

Let us look at this qualitative improvement by using the yardstick values of pressure resistance and water content. In this respect, from the third quarter of 1958 until the third quarter of 1959 the mean pressure resistance rose from 94 to 98 kiloponds per square centimeter at the VVB Brown Coal in Leipzig, from 83.3 to 86.2 kiloponds per square centimeter at the VVB Brown Coal in Halle, and from 127 to 131 kiloponds per square centimeter at the VVB in Cottbus. During the same period, the mean water content dropped from 17.1 to 16.7 percent at the VVB in Leipzig, from 19.0 to 18.2 percent at the VVB in Halle and from 16.8 to 16.4 percent at the VVB in Cottbus. On the basis of these figures, it can be said that the pressure resistance was increased and the water content was lowered at all of these VVB's even though these results are still far from satisfactory. Particularly the VVB Brown Coal in Halle must make every effort to raise the quality level of its output.

The first Conference for Qualitative Improvement held at Profen was aimed in effect at abolishing the slogan: "One More Ton per Work Shift!" in favor of the newly coined slogan: "One More Ton of Quality-Tested Briquette for Our Workers' and Peasants'State!"

Despite the fact noted at the Second Conference for Qualitative Improvement which was held in November 1959 at Profen that some improvements had been made, it was also noted that the struggle to improve qualtiy together with meeting the daily fixed volume or quantitative output quota was not understood. While during the first half of the year the quota set for brown coal briquette production was surpassed by 256.9 thousand tons (Tt), this was not the case during the third and fourth quarters of 1959. The reason for this was the inefficient management and control system in effect at briquette plant operations. Poor political leadership resulted in an increase in mechanical and electrical system breakdowns, in low-grade technology, sloppiness, and neglect of safety rules.

Furthermore, no provisions had been made by various plants for a regular supply of quality-tested crude brown coal used in briquette production. The important thing is to liquidate these bottlenecks as quickly as possible and to intensify the mobilization of the workers in the coal industry for the daily struggle to meet the quota by improving the quality standard still further.

Socialist reconstruction means the concrete aspects of the struggle to increase labor productivity. The yardstick values of its success are its overall working efficiency, a rise in labor productivity, a higher technological level of production, a lower unit-cost price, and the degree of plant operational efficiency.

The practical application of socialist reconstruction depends on the highest degree of automation to raise production to its technological peak level.

This can be done through total mobilization of all workers and a broad development of the socialist collectives. Applied modern technology is based on intensified job utilization of all workers.

The socialist reconstruction principle applied to brown coal mining will result in a rapid shrinking of the heavy manual labor sector and will lead--where processes and operations are already mechanized--by the general use of up-to-date testing and control techniques to full mechanization and automation. Soon track maintenance and the moving of sectional drainage equipment will be mechanized to such a degree that operations of this kind will be jobs to be handled by skilled machine operators.

In the area of industrial safety, all potential sources of danger (as suggested by the workers involved) must be liquidated as much as possible and all chances for lowering the number of accidents must be utilized. The VVB and other plant reconstruction plans must provide for constant checks on operational safety measures before and after installation. For example, a significant task which must be completed by 1960 is the installation at major plants of an industrial isotope-controlled radiation-barrier device which prevents the bypassing of stop lights over stretches of heavily-traveled and dangerous railroad track (the major cause of train collisions).

The new technological development will continued to concentrate on the application of programming control to bucket-wheel dredges, on the general uses of tractors, a new drainage technique (major-area drainage) by using high-efficiency Uta pump equipment, on catching up with the latest conveyor belt and caterpillar-track techniques, and on the broadest use of industrial television.

All open pit mining projects are to be developed technologically with one aim in view: to extend the maximum recultivable areas beyond plan requirements.

To make sure of an existing maximum capacity, and a constant operational potential of plants and equipment, the constant revamping of regular repair and servicing organizations is essential. This includes steps to be taken regarding the stockpiling of parts at and specialization of maintenance workshops, streamlining of servicing techniques, and organization of automated repair work according to the highest standards of science and engineering and the full utilization of the creative potential of the workers.

The deadline for putting the briquette plants' quality-improvement reconstruction measures into effect is to be advanced to the earliest date possible. For better coal-dehydration control, the driers will be equipped with automatic-recording type hydrostats. Starting in 1960, a number of briquette plants will be equipped with this kind of automatic drier control. An important rule to be added for further perfecting the reconstruction plans is taht the required briquette core temperature at loading position must not exceed 40 degrees centigrade. These requirements concerning dry coal and briquette cooling have high priority for implementation at the earliest date.

Also very important is the winter operational maintenance of brown coal mines. The production plans for the fourth and first quarters are based on this.

The setback in meeting plan quotas suffered with the onslaught of bad weather in the first wuarter of 1959 showed that most plant managements do not sufficiently prepare for this period. Coincidentally, the VVB Brown coal in Leipzig and Halle, which happen to work the most difficult open pit mining terrain, were surprised by the season's first rains and suffered severe production losses. This shows a poor evaluation policy of experiences from years past. This is irresponsible and not exactly a feather in the cap of the local brown coal mining efficiency experts.

The fact that frost has already set in is no excuse to stop discussing at production meetings and shop talks with workers the problems of winter operational maintenance and preparedness, since every Brother Miner should know how to use the scientific antifreeze equipment at hand.

Under Party and Trade Union leadership, 1960 is the year within the current Seven-Year Plan to push the fight for the unreserved and consistent execution of the Politbureau Directive of 24 March 1959. Every effort must be made to support brown coal mines which are not yet completely safe for open pit mining and which are not able yet to manage their drainage work problem. The fight against working hazards, collisions, and derailments must be carried on more than ever. Aside from the education and training of workers, the development and installation of engineering safety measures must be speeded up.

The briquette plants must fight for peak-volume and quality production. The prerequisites for this are a higher level of technical knowledge on the part of the workers, technological advances made by the briquette plants, and the application of the new performance-bonus pay for maintaining the necessary high grade of production material.

To overcome the developmental differences between VVB's and brown coal mines, it will be necessary to make exchange of data and output comparisons between the VVB's and brown coal mines a regular working feature. In this connection, it is important now to raise not only the standard of the lagging VVB Brown Coal in Halle but that of the normal VVB Brown Coal in Leipzig.

The year 1960 represents a challenge to all workers in the coal industry to achieve higher production goals and fulfill evolved technological tasks. Their fulfillment (based on the evaluation of last year's experience) requires a persistent way of fighting for better quality production in the industry. Each worker, technician, engineer, plant economist, and scientist of the coal industry has a great and responsible task to fulfill: to take a big stride forward toward the solution of the chief economic problem.

2084

EAST GERMANY

Economic Briefs

Soernewitz Supplies 999 out of the "1000 Small Luxuries of life"

The VEB Electric Heating (Elektorwaerme) specializes in the production of such household items as electric kitchen stoves, miniature motors, hot-water tanks, and unit-control flat irons. The target date for this plants production of over one million flat irons with [electric-heat] control is 1962.

(Energietechnik, Vol X, No 2, February 1960 East Berlin, page 84; CSO: 3846-N/c)

* * *

Cottbus Gets 5,000 New Building Apartments with Central-Heating Facilities

The government of the GDR has earmarked 85 million DM for the purpose of creating housing facilities for 16,000 people by 1965

(Energietechnik,Vol X, No 2, February, 1960, East Berlin, page 84; CSO: 3846-N/c)

* * *

A Saving of 500 Million Rubles

This saving is to result from the construction of the uniform Intra-European Socialist State Power Network now in progress. Aside from the tapping of additional power sources for the basic industries of the countries involved, there are increased possibilities now in case of power plant breakdowns and peak loads to hook up with neighboring states for needed electric power supplies.

(Energietechnik, Vol X, No 2, February 1960, East Berlin, page 84: CSO: 3846-N/c)

* * *

Guiding Data for the Electric Power Supply of a Socialist Housing Area

Taking into account the expansion of power supply stations (gas, heat) in a given housing area, the connected load per household by 1980 is set at 15 to 30 kilowatts. Compensating for an efficiency factor of 0.4 and a diversity factor of 0.27 or 0.22 (applied to 1,200 apartments), the precalculated power line load per household is between 1.6 and 2.6 kilowatts.

The power consumption for street and traffic lights per apartment must be set at 50 watts. Above power-output data do not include any subsequently established units of a housing area (shops, restaurants, nursery schools, etc.)

(Energietechnik, Vol , No 2, February 1960, East Berlin, page 84; CSO: 3846-N/c)

* * *

Work on New Chemical Plant Equipment

This work shared by almost all socialist countries of Europe. In some of these participating countries, it is of a highly specialized nature. The GDR and Poland are assigned to plan and equip PVC plants.

(Energietechnik, Vol X, No 2, February 1960, East Berlin, page 85; CSO: 3846-N/c)

2084

* * *

Freindship of the Workers of the Ruhla Clock and Machine Factory with Workers in the Czechoslovak People's Republic

A close friendship joins the workers of the Klement Gottwald VEB Clock and Machine Factory in Ruhla with their Czechoslovak colleagues employed in the Chronotechna Enterprise in Sternbeck. During the period of expansion of this special enterprise for the production of alarm [mechanisms or clocks] in Czechoslovakia, the experienced Ruhla specialists have undertaken an active experience-exchange program with the technicians, technologists, and quality control specialists of this enterprise. The delegation of colleagues of an enterprise from Sternberk convinced themselves of the high level of industrial development of the great German clock factory which carries the name of the deceased Czechoslovak state president. They took back with them valuable knowledge on the new alarm clock production and were able on the other hand to give their German friends valuable ideas for a better time-saving clock-surface treatment. As a result of this exchange of experience, the Ruhla enterprise will shortly go over to infrared drying in the clock housing production department.

In the last five years the export of Ruhla men's and women's watches to the CSR has increased sevenfold. This was possible because labor productivity in socialist competition has increased greatly, by 14 percent in comparison to the previous year [1958].

(Feingeraetetechnik, Vol IX, No 1, January 1960, East Berlin, page 4; CSO: 3847-N/e)

* * *

1907

Guben Chemical Fibers Combine

Among the world's synthetic fiber producers, the GDR occupied eighth place in 1958, following the USA, Japan, England, West Germany, and the Soviet Union. If synthetic wool made of cellulose is included, then the GDR already occupied first place in the world in 1957, with 8.3 kilograms of artificial fibers for each member of the population [in the GDR]. The per-capita production of West Germany is thereby far exceeded with this result. The per-capita production of completely synthetic fibers amounted to only 0.3 kilograms in the same year [in West Germany], whereas in the USA, for example, it amounted to only 1.4 kilograms.

During the course of our Seven-Year Plan, therefore, the production of completely synthetic fibers will increase to sixfold the present amount.

The Guben Chemical Fibers Combine will contribute greatly to this task, and, starting in 1965, will supply annually 3,000 tons of dederon fine silk, 9,000 tons of lanon fibers, and 1,000 tons of lanon fine silk. The production of lanon will begin in 1962 and dederon fine silk will be produced only after 1962 [sic]. The combine is being constructed with the support of the "Wilhelm Pieck" VEB Artificial Fibers Plant in Schwarza, which for some time has had a dederon fine silk installation and has been working on an experimental plant for lanon. We shall also mention the "Freidrich Engels" VEB Artificial Silk Plant in Premnitz, which has a dederon fiber installation in operation and which in 1960 will take up the production of lanon staple fibers in a pilot installation.

The location of the new plant has been very favorable selected. Of special advantage are the proximity to coal, the good water management conditions, the textile experience of the workers, and the short transport distances (Schwedt Petroleum Refining Plant as raw material supplier and the Saxon textile industry as consumer).

(Chemische Technik, Vol XII, No 2, February 1960, Berlin, page 103; CSO: 3845-N/b)

* * *

Chlorine Production of the Buna VEB Chemical Plant

The increase in chlorine production from now until 1965 is giving special weight to the solution of the main economic task, since chlorine, in addition to caustic soda, is one of the most important inorganic basic materials of chemistry. Chlorine is very important for the GDR chemical program, as it is used by way of hydrochloric acid for PVC production and for the production of aluminum chloride, ethylene oxide, and chlorinated hydrocarbons. The chemical program of the GDR therefore calls for a 38-percent increase in chlorine production.

The largest part of this production will be undertaken by the Buna VEB Chemical Plant, whose chlorine production by 1965, in comparison to 1958, will increase to 133 percent.

This plan goal will be reached through the following measures:

1) expansion by 160 cells of the available installations withing the framework of the Soviet Union program;
2) reconstruction of the available installations and step-by]step increase in the load to 20,000 A [amperes?];
3) construction of a new chlorine factory with 50,000-A cells in a large-scale installation. Construction will begin on 1 January 1960. The first construction phase will be put into operation on 1 July 1961 and the second phase on 1 January 1962.

(Chemische Technik, Vol XII, No 2, February 1960, Berlin, page 103; CSO: 3845-N/b)

* * *

Piesteritz Nitrogen Plant--Construction Area of the Seven-Year Plan

The people-owned Piesteritz Nitrogen Plant--one of the seven large chemical enterprises in Halle Bezirk--has been changed into a construction area of the Seven-Year Plan. While the production of this plant will increase by 1965 to almost 2.5 times that of the present production, the number of workers will increase by only about 10 percent. In addition to the construction of numerous new production enterprises with an investment expenditure of about 200 million DM,

the available installations will also be systematically reconstructed. Nearly completed is a new melamine installation, which will take up production at the beginning of 1960. Through this expanded melamine production, significantly large amounts for export, as well as for the further processing of this raw product into enamel resins and for meladure molded plastics, will be available in the future.

The second phosphorus oven in the nitrogen plant is also to take up production by the end of the year. From the phosphorus produced in Piesteritz, chiefly sodium ammonium phosphates will be produced for the cleansing material, textile, pharmaceutical, food, and confectionary industries.

In addition, a new fertilizer unit is going up whose first partial section is already (in 1960) producing the valuable mixed fertilizer, nitrophoska.

The nitric acid required for this will be supplied by a modern factory which is also under construction. An additional carbide factory with two high-output furnaces, which will be designed from the most modern standpoint, is also among the most important investments of the Piesteritz plant in the Seven-Year Plan. A modern research center will be created with the construction of a central laboratory. A training combine will also contribute to the growing requirements for professional worker training.

(Chemische Technik, Vol XII, No 2, February 1960, Berlin, page 103; CSO: 3845-N/b)

1907

POLAND

The Organization of Repairs in the Polish Coal Industry

[This is a translation of a discussion contribution to the Third Industrial Conference on Maintenance, Chamber of Technology, Leipzig, by Mining Engineer, R. Gawel, Katowice, published in Berbautechnik, Vol X, No 1, January 1960, East Berlin, pages 29-31; CSO: 3855-N/b]

The coal industry is the industrial base of the Polish state. Today an average of 97 million (Mt) of anthracite and 7 million of brown coal are mined; this puts Poland in Sixth place among the world's coal mining countries. However, the Seven-Year Plan for the development of the Polish economy provides for a substantially higher mining output, which by 1965 is expected to reach an average total of 113 million tons of anthracite and 27 million tons of brown coal.

A planned coal-mining output depends on a correspondingly high degree of mechanization of mining operations and an extensive outlay for new equipment. The specified and profitable use of this equipment in turn requires the services of a staff of skilled operators and a sufficiently large stock of spare parts.

The Polish mining system assigns the maintenance of mining equipment and the job of parts provisioning to those who actually use this machinery. They are responsible for keeping their equipment in good order as required by the maintenance and repair instructions put out for this kind of machinery. The safest maintenance system is the inspection and servicing of machinery at certain time intervals according to a master plan, based on data collected in Poland and abroad.

The prerequisite for the regularly scheduled inspection and servicing jobs is that they go through local repair-unit channels--that is, through the mine itself. But in many cases it is preferable to assign special repair workshops or combined repair and assembling workshops to do the job. An economic-engineering analysis has established the fact that repairs made by special workshops or plants are much cheaper than those made by local talent. This is parti-

cularly true where large numbers of repairs are involved--for example, of railroad trains or mining machinery or of more complex equipment, such as steam turbines, boilers, major excavators, etc.

The Polish coal industry has created two groups of plants equipped for doing special repair and assembly jobs: the first group includes central repair shops; the second includes combined repair and assembly shops.

The central repair shops carry out general repairs of mining machinery delivered there for this purpose. These shops are specialized; some repair electrical motors, some only open pit mining machinery, and others only conveyor systems.

The combined repair and assembly shops, on the other hand, take care only of repairs of machinery used in the mining area. For this purpose, the combined shops dispatch their own repair and assembly crews to the mine in question.

Central Repair Workshops

It is a well-known fact that machinery repairs repeat the job done by assembly type operations. To be serviced machinery must be dismounted, and tested for wear and tear; if necessarym parts must be replaced and the machine assembled again. More fully mechanized operations, good teamwork of crews, and operational planning may lead to a substantial reduction in servicing time. For this reason, special workshop repair operations backed up by a corresponding service management can more easily be automated than those done by local mining machine shops.

The Polish Coal industry has available quite a number of these special repair workshops. These shops have a machine tool plant-like setup and employ 500 to 1,400 technicians. The operational space available to each of these repair workshops is between 2,000 and 10,000 square meters. Established between 1946 and 1949, the Polish coal industry's central repair workshops have expanded operations and have been equipped in the last few years with a modern central spare parts depot and various up-to-date mechanized devices.

The central repair workshops take care not only of machine shop reapris but of the production of quite a number of non-standardized spare parts and of certain mining equipment.

For this purpose, they are equipped with their own gray-iron and steel foundries, forges, laboratories, design offices, and other auxiliary departments. Since they started operations, the central repair workshops have gradually taken over most of the repair jobs done on automated mining machinery. Between 1950 and 1958 the total amount of central repair shop work done on mining machinery rose to 25 times the initial amount. At the present time their yearly repair work-load is about 6,000 various types of mining machinery, 20,000 electrical motors, a production average of 10,000 tons of various nonstandardized spare parts and equipment and 4,000 tons of castings.

The central repair workshops charge the mines cost estimate-fixed prices for each repair job done. Included in the price are spare-part value, crew wages, and general shop expenditures. The price range of an overhaul-type of repair job on mining machinery is between 20 and 70 percent of the machinery purchase price. A new trench-mining unit, for instance costs about 80,000 zlotys, while an average central shop overhaul job done on the same machine is 27,000 zlotys. A uniform price listing of this sort simplifies considerably the cost-estimating relations between mine and central repair workshop. Furthermore, it permits an accurate price control of various repairs and workshops and streamlines basic operational controls and time studies made on individual repair jobs.

The Polish data collected on the centralization of standard repairs done by central repair workshops shows the profitableness of this type of organization in connection with making progress in high-class repair technology, safeguarding the quality of repairs, and facilitating tests to increase production. The average yearly growth of central repair workshop productivity is between 4 and 6 percent. Before delivery, each repaired peice of equipment is maximum performance-tested at the shop. This guarantees each repair job in the way that a plant guarantees a new piece of machinery. The warranty time depends on the type of machinery repaired and is between 50 and 100 percent of time guaranteed by the plant for brand-new machinery (3 to 6 months).

The problem of spare parts needed for mining machinery reapirs deserves a detailed special treatment. All that can be said here is that in the Polish coal industry mines and workshops are supplied with standardized spare parts by central depots. This central depot is a commercial enterprise. It stores all types of spare parts for any standard type of

mining machinery. This way the spare-aprts stock at mines and central repair workshops can be kept down to a minimum. All nonstandardized spare parts for nonstandardized machinery, as mentioned previously, are made in central workshops.

Repair and Assembly Shops

For overhaul jobs to be done on major and complex equipment which is unsuited for delivery from the mine to a central repair workshop, the Polish coal industry has founded specialized repair and assembly shops. These repair and assembly shops specialize in servicing certain goups of machinery types; for instance, there is a separate shop for repairing engines, steam turbines, boilers, and superchargers. Other repair and assembly shops take care only of the repair of conveyors, mobile units, and cola-separating equipment. These shops employ between 1,000 and 2,000 technicians, who are organized in brigades which are deployed at the mine itself during repair operations. During this time they can work with the local mine machine shop workers and/or work out from their own little workshop set up at the local mine. The reapir brigade consists of highly skilled mechanics and helpers. Each brigade is led by an experienced foreman or engineer.

The mine is charged for all repair and assembly costs, brigade workers' wages, and also for parts-replacement costs and over-all expenditures.

A statistical analysis shows that these costs are 20 to 60 percent higher than if carried by the local mine doing these repairs single-handed. The reason for this is that the mine pays not only for pre and post-operations of the brigade but for their miscellaneous expenses and the central repair and assembly workshop's over-all expense account. Therefore the services of the latter are required only in case of a lack of specialized local mining personnel or if a combined quipment repair and modernization job is needed. For this task, the specialized repair workshops have available their own kind of planning and design offices.

On the basis of experience gathered from the field of repair organization, the conclusions to be drawn from them are as follows:

1. Among the repair systems tested on generally used standardized mining machinery, the central repair workshop system takes first place.

2. Machinery of complex nature or unsuited for complete disassembly or transport, as well as stationary equipment, should be serviced by special local mine repair brigades. Therefore, the mine must train special-purpose technicians to carry out these repairs themselves. The assitance rendered by the repair and assembly workshops should be limited to the supply of spare parts and practical advice by experienced engineers and foremen.

- END -

2084